

Clinical Obstetrics & Gynecology



Prof. Ahmed Badawy MD MRCOG PhD

Professor of Obstetrics & Gynecology

Mansoura Faculty of Medicine

Dr. Abdel Fattah Haroun MD

Fellow in the Fertility Care Unit

Mansoura Faculty of Medicine

2009

VISIT...

LANZAROTE
Caliente.COM

Preface to second edition

This is the second edition of this book. We were encouraged to issue this edition after the good responses we received from our students and colleagues. As we decorated in the first edition, in light of the rapid advances in medicine and ready access to information, it is critical for medical students and practitioners to develop their basic skills of communication and clinical examination. The road to the right diagnosis should always pass through the traditional way of careful history taking and systematic examination before resorting to sophisticated, costly and sometimes confusing investigations.

The medical library has been, recently, deficient in this type of clinically-based books. Unfortunately, communication and examination skills are going to be a lost art. We were motivated to fill the gap in the medical library by this book trying to revive these important skills for both undergraduate, postgraduate students and to practitioners in the field of Obstetrics and Gynecology. This kind of books retains not only theoretical knowledge but also the cumulative experience of the authors and contributors for many years spent in academic teaching as well as in helping patients.

The book has two main section, Obstetric section and Gynecology section. In each part, it displays the ideal way of communicating the patients, examining them and the required simple investigations. We were interested in using many pictures to explain better the pathologies and techniques. We finished with a section about differential diagnosis arranged in their order of importance. The book was revised and rewritten many times to have it in its final look hoping it will add to the knowledge of our students and colleagues. We would like to thank all the staff members of the department of Obstetrics and Gynecology in Mansoura Faculty of Medicine for their continuous encouragement and support. We dedicate this work to our professors who taught us and our patients who gave us our experience.

Ahmed M. Badawy

Abdel Fattah H. Allam

2009

CONTENTS

PART I : CLINICAL OBSTETRICS:

Page

I- HISTORY TAKING IN OBSTETRICS.	5
II- GENERAL EXAMINATION	17
III- ABDOMINAL EXAMINATION	38
IV- VAGINAL EXAMINATION	78
V- RECTAL & RECTOVAGINAL EXAMINATION	98
VI- OBSTETRIC DIAGNOSIS	99
VII- CLINICAL TIPS	100
• Terms and definitions	100
• Example of history and examination of an obstetric case	101
• Differential diagnosis in obstetrics	103
• Multiple choice questions	110

PART II : CLINICAL GYNECOLOGY:

Page

I- GYNECOLOGIC HISTORY TAKING.	116
II- GENERAL EXAMINATION	124
III- ABDOMINAL EXAMINATION	126
IV- PELVIC EXAMINATION	127
V- INVESTIGATIONS & SPECIAL TESTS	137
VI- CLINICAL TIPS	150
• Pediatric gynecologic examination	150
• Gynecologic and surgical positions	152
• Differential diagnosis of gynecologic complaints	156

PART I

CLINICAL OBSTETRICS

I- History taking in obstetrics

Introduction:

The diagnosis of disease is becoming ever easier, thanks to the scientific facilities available e.g. x-rays, ultrasound scans but the importance of the clinical diagnosis has not decreased. Taking a patient's history is the **most important skill** in medicine; it is the **keystone of clinical diagnosis** and the foundation for the doctor–patient relationship. Eliciting accurate, detailed and unbiased information from a patient is a skilled task or an art and not simply a matter of recording the patient's responses to a checklist of questions.

The history will help you to formulate a differential diagnosis and focus your physical examination. As important, it will also help you in getting to know patients, gaining their confidence and understanding the social impact of their illness. History taking is considered as a **meeting of two experts**, the *patient*, an expert on the experience of illness and the *clinician*, an expert on the diagnosis and management of illness.

The **medical history** of a patient is **information** gained by a student, physician or other healthcare professional by asking specific questions, either of the patient or of other people who know the patient and can give suitable information, with the aim of obtaining history useful in formulating a diagnosis and providing medical care to the patient. This kind of information is called the symptoms, in contrast with clinical signs, which are ascertained by direct examination.



The information obtained in this way, together with clinical examination, enables the physician to form a diagnosis and treatment plan. If a diagnosis cannot be made then a *provisional diagnosis* may be formulated, and other possibilities (the *differential diagnosis* or list of potential causes of the symptoms) may be listed in order of likelihood. The treatment plan may then include further investigations to try and clarify the diagnosis.

practical points concerning history taking:

- Always have a friendly and sincere interest in your patient's problem (s).
- Keep your appearance neat and clean which will help you to gain your patient's trust.
- Be respectful and confidential.
- Show a continued interest while you are in contact with the patient.
- When approaching the patient, always make it a point to introduce yourself. After the introduction, if you have a brief conversation which is not medical, you will find that this will help both you and the patient feel much more comfortable and at ease with each other
- Collect the information you need in the order in which you're going to present it.
- Use the same formula (in the obstetric case sheet) designed by the OB/GYN department in every time so you would not miss anything vital.
- Present in the same way every time so you can go readily under stress e.g. when you are very busy or doing your final clinical exam.
- You should be able to give reason for everything in your presentation. If you cannot explain why it is in the presentation then it should not be there.
- To take a good history, a student must have the necessary skills to interpret emotion, vocabulary and behaviour, in short, to possess the art of history taking.

Personal history: entails asking the patient about

1- Name: asking the patient about her full name serve to put her at ease particularly when she is called by her name and it is also important for the filing system.

2- Age: it may be difficult to get the exact age in many cases as asking the patient about her age, may cause her some embarrassment, However, we can resort to indirect questions to calculate the age e.g. the age at marriage and the duration of marriage or the age of an elderly son.

Asking the patient about her age is important because:

- a) Pregnancy before 18 years and after 35 years is considered high risk pregnancy.
- b) Certain age groups are more liable to develop some obstetric complications.
- c) Age should be taken into consideration during management

3- Residence: the patient's address, phone number is of help in the filing system, to enable contacting the patient when necessary. Also, some diseases are endemic in certain areas.

4- Occupation:

- a) Some exhausting jobs do expose the pregnant woman to more physical or emotional stress which may lead to abortion or preterm labour.
- b) Other occupations expose the pregnant woman to various hazards such as:
 - 1- Chronic lead poisoning in women working in printing jobs, leading to repeated abortions.
 - 2- Women employed in radiological departments may be subjected to the dangerous effects of radiological emissions on pregnancy.
 - 3- Pregnant medical or veterinary doctors and nurses are subjected to various infectious diseases, and these may have a deleterious effect on the pregnancy and its outcome.

5- Marital state, duration of marriage (s) and number & sex of living children:

All these factors reflect the social status, mode of living and psychology of the patient which in turn can affect the course of pregnancy and labour. Again, the number and sex of living children is put into consideration during making decision regarding choice of the line of management in certain situations.

6- Special habits:

Smoking, intake of alcohol and addiction may have a deleterious effect on the pregnancy and its outcome, for example, smoking may cause intrauterine growth retardation.

7- Personal history of the husband: ask about the name, age, occupation, special habits and diseases if any.

Complaint: ask the patient, *what is the main reason for your visit today?* and then allow the patient to tell you her problem. The "*Chief Complaint*" is the problem that has brought the patient to the hospital. The complaint and its duration should be written *in the patient's own words*. If there are many complaints, they should be written in a *chronological order* i.e. specify the duration of each complaint and arrange the different complaints according to the time of occurrence.

N.B. Many pregnant women seek advice simply for antenatal care and then confinement (to be sure that they are pregnant and that the pregnancy is normal and to have their name listed for delivery)

Menstrual history:

Entails asking the patient about the following items *in sequence*.

1- Age of menarche:

This is defined as the age at the onset of the first menstrual flow.

2- Menstrual cycle:

- **Rhythm:** regular or irregular. Any abnormality in the rhythm must be taken into consideration in calculating the duration of pregnancy.
- **Cycle length:** It is the time intervening between the first day of one period to the first day of the next. In the majority of women the cycle length ranges from 3 to 5 weeks.

3- Menstruation:

- Duration of menstrual flow:

The normal duration of menstrual flow ranges from 2 to 7 days.

- **Amount of menstrual flow:** The amount is regarded as normal if the patient reported that it is of average amount (20- 80 ml).

A bright red colour & passage of clots are suggestive of excessive menstrual loss as normally the flow should be darkish red and non clotted. Scanty menstrual flow may be indicated by its dark brownish color (coffee-ground) and minimal number and soaking of the sanitary napkins used.

- **Associated symptoms e.g. dysmenorrhea, PMS:** ask the patient about presence or absence of dysmenorrhea or premenstrual symptoms.

Dysmenorrhea means pain related to menses which is severe enough to interrupt the woman from doing her usual daily duties. The site, character and time relations of any menstrual pain is asked about.

- **Intermenstrual period:** is the period from the last day of menstrual flow to the 1st day of the next flow. Ask about presence or absence of pain, bleeding or discharge during this

period. In case of intermenstrual bleeding, the patient should be asked whether bleeding has a regular time relationship to the menses or if it is provoked by coitus.

4- Date and character of the last menstrual period (LMP):

The first day of last normal menstrual period should always be asked about and it should be regarded as the period before the onset of any menstrual abnormalities. LMP is important as it helps in calculating the duration of pregnancy and the expected date of delivery (EDD). A quick estimate can be made by taking the date of the LMP and adding 9 months and 1 week. Therefore, if the LMP was on 2-2-2004, the EDD will be on 9-11-2004. If the LMP is 27-10-2004, the EDD will be 3-8-2005.

If the patient is uncertain of her dates, it is often helpful to relate the onset of pregnancy to some special event, e.g. the feast, Ramadan, school holidays, etc.

Ask about the character of the last menstrual period, to know whether it was normal in amount, duration, character of blood loss and whether it was at the expected time or not. This can avoid the following misinterpretations:

- An irregular period (e.g. scanty flow) may be considered by the patient as an attack of threatened abortion.
- An attack of threatened abortion may be considered by the patient as the LMP.
- Slight vaginal bleeding at the time of implantation may be considered by the patient as a menstrual flow.

Obstetric history:

The obstetric history lists prior pregnancies and their outcomes. It also includes any complications of these pregnancies. The details of previous obstetric history is important because the outcome of previous pregnancies and any significant antenatal, intra or postpartum events may have influence on the management of the current pregnancy. The following items of obstetric history should be asked about:

1- Gravidity: means the number of previous pregnancies the patient had had, irrespective of their duration or mode of termination whether in abortion or labour. The present pregnancy is included in the numerical description. The patient is asked *how many times have you been pregnant?*

2- Parity: means the number of previous deliveries the patient had had irrespective of its nature or outcome. So, delivery of twin or triplet fetuses is counted as one delivery. The patient is asked *how many delivery have you had?*

The term primipara describes patient who had been delivered once while the term multipara describes patient who had been delivered more than once (2 or more).

3- Previous deliveries:

A. Number of full term normal deliveries (FTNDs) & their outcome:

Ask about the number, order and outcome of each delivery.

Normal delivery means delivery of a single full term living viable fetus presenting by the vertex through the natural birth canal within a reasonable duration, without aid or complication to both the mother & fetus.

B. Number of full term abnormal (difficult) deliveries & their outcome:

Ask about the number, order and outcome of each delivery.

While taking the history of the previous deliveries, the student must carefully ask about the following in order to know whether the previous deliveries were normal or abnormal.

- The duration of labour: normally ranges from 3-24 hour
- The time of rupture of membranes: normally membranes usually rupture at the beginning of the second stage of labour.
- The mode of termination of labour: whether the delivery of the fetus completed spontaneously or needed operative interference such as forceps, vacuum extractor, breech extraction, CS ...etc. Also, whether the delivery of the placenta completed normally or was complicated with hemorrhage or retained placenta.
- The behavior of the fetus and the infant during and after labour:
Ask about whether the fetus is living or SB, and if living needed resuscitation or not, presence of birth injuries or congenital abnormalities, death in the early neonatal period

C. Number of preterm labours & their outcomes:

Ask about the number, order and outcome of each preterm delivery.

Preterm labour means delivery of the fetus between 28 week and 37 week irrespective of the method of delivery and outcome.

D. Number of stillbirth (SB) deliveries:

Ask about the number and order of each SB delivery.

In cases of still born fetus (fetus born dead), the student must ask whether it was; macerated or fresh and in the latter group whether it died before labour (antepartum) or during labour (intrapartum). Also ask about fetal weight, sex and presence or absence of fetal malformations.

E. Date of last delivery

4- Abortions: ask about

- The number
- The duration of pregnancy in each abortion.
- The cause (if known).
- The mode of onset (spontaneous or induced)

- The mode of termination (spontaneous, surgical evacuation, manual vacuum aspiration, medical evacuation or hysterotomy)
- The nature of the postabortive period
- Date of last abortion

5- Previous pregnancies:

- Attended or not
- Course of previous pregnancies: complicated or not and the nature of complication (e.g. Bleeding, preeclampsia, heart lesions, kidney lesions,etc.
- Fate of the previous pregnancies: whether ended in abortion, preterm labour or full term delivery.

6- Previous puerperia: ask about presence of complications such as postpartum hemorrhage (primary or secondary) or sepsis (fever) and other complications as deep vein thrombosis, breast infection or urinary tract infections.

Past history:

1. History of previous disease:

Some medical conditions or therapy given to treat them may have a significant impact on the course of pregnancy e.g. Hypertension, Heart disease, Diabetes mellitus, Kidney disease, Thyroid disease....etc. Alternatively, pregnancy may have an impact on the medical condition.

Open-ended questions such as the following are helpful:

- Are you now seeing a doctor for any reason?*
- Have you ever been hospitalized? If so, when and where? What was the reason? What was the outcome?*
- Have you in the past ever consulted or been treated by a physician for any problem?*

If the condition truly represents a problem for which the patient has been treated in the past and is not a current, active symptom, it should be recorded in the past history.

2. History of previous operations: previous *gynecological* or other *surgical* operations.

Any operation performed on the patient may have its bearing on the course of pregnancy and labour. Ask about details as to type and reason for, place, date, and any complications of surgery.

3. History of traumas and accidents: ask about details as to place, date, treatment and sequelae.

4. History of drug intake and allergy

5. History of transfusions: include date, reasons for, and reactions.

Family history: ask about

- Heritable illnesses among first or second degree relatives e.g. D.M, Hypertension, congenital anomalies.
- Non hereditary but familial diseases e.g. Tuberculosis & Rheumatic fever
- Multiple pregnancy
- Diseases of husband and his family

Present History (history of the current pregnancy or illness):

The history of the present condition constitute one of the most important part in the history taking. It is a narrative that should flow like a story in a logical and chronological order, from the time when the patient was last perfectly well i.e. onset of first symptom to present day.

Begin the story at the point at which the patient last felt well or was last in her usual state of health.

In obstetric cases, the following items should be asked about:

A) Details of current pregnancy: Ask about

- 1) Date of the last normal menstrual period (LNMP)
- 2) Early pregnancy symptoms: as morning sickness, food craving, frequency of micturition,etc
- 3) Confirmation of pregnancy by pregnancy test and / or ultrasound.
- 4) Whether the patient received any antenatal care or not and ask about any investigations done to document pregnancy as pregnancy test or ultrasound (mention the date and result of each).
- 5) The date of quickening

B) Analysis of the patient's complaint(s):

The student should begin by inviting patients to provide an account of their chief complaint (symptom). Learn to listen without interruption and encourage the patient to continue the story from the first symptom right up to the time of history taking.

When the patient has completed the story, clarify the description by specific questioning to obtain a detailed chronological account of the development of the illness. Identify what investigations and treatment have been undertaken so far and what the patient has been told about the illness. *Obtain a detailed description of every symptom reported by the patient or known from interrogation using the following items:*

- 1) **Onset:** i.e. *when did the patient's symptom begins?* It may be dramatic, sudden, gradual or insidious.
- 2) **Course:** may be progressive, stationary, regressive or intermittent
- 3) **Duration:** *how long has this condition lasted?*

- 4) **Severity:** *how severe is the problem?*
 - 5) **Location/Radiation:** *is the symptom (e.g. pain) located in a specific site? Has this changed over time? If the symptom is not focal, does it radiate to a specific area of the body?*
 - 6) **Aggravating and/or alleviating factors:** *What makes the condition worse? and What makes it better?*
 - 7) **Associated symptoms:** *are there any associated symptoms?* Often, the patient notices other things that have occurred around the same time as the dominant problem. These tend to be related.
 - 8) **The investigations done:** date , place and results
 - 9) **Therapy:** *what medications do you actually take?* Ask about the name of the drug, dose, route, and frequency of use. Also list home remedies, nonprescription drugs, vitamins, mineral or herbal supplements, and medicines borrowed from family members or friends. It is a good idea to ask patients to bring in all of their medications so you can see exactly what they take. Also ask whether treatment had any effect on the patient or has the treatment not improved or altered the patient's response?
 - 10) **Impact on the patient's normal activity:** *does the problem interfere with your normal activity or lifestyle?*
- C) **Symptoms of pathological pregnancy:** ask about significant symptoms which the patient may or may not experience and which relate to pathological pregnancy. *Are there any other symptoms associated with the chief complaint*, e.g. leak of watery fluid per vaginum, vaginal bleeding, or passage of tissue vaginally, symptoms suggestive of severe preeclampsia as headache, epigastric pain, blurring of vision, swelling of the lower limbs, upper limbs and faceetc
- D) **Symptoms of approaching labour:** as
- **Lightening:** i.e. coming down of the abdomen with relief of the upper abdominal symptoms and the appearance of some pelvic symptoms as heaviness in the lower abdomen and the pelvis, mild low back ache, frequency of micturition and the sense of something coming down in the pelvis.
 - **False labour pains:** characterized by being colicky infrequent abdominal pains which is irregular, of short duration and usually relieved by sedatives
- E) **Symptoms referable to other systems:** ask about relevant cardinal symptoms in each of the major systems especially GIT and urinary systems (due to their close relation to the genital system).

A review of systems is obtained through a series of questions seeking to identify symptoms which the patient may be experiencing or has experienced.

Start with a fairly general question as you address each of the different systems.

Examples of starting questions are: "*How is your digestion? Or how about your bowels?...etc.*"

Gastrointestinal symptoms: heartburn, appetite, nausea. Bowel movements, stool color, change in bowel habits, pain with defecation, rectal bleeding or black or tarry stools, constipation, diarrhea, abdominal pain, food intolerance, excessive belching or passing of gas. Jaundice.

Urinary symptoms: Frequency of urination, polyuria, nocturia, urgency, burning or pain during urination, hematuria, flank pain or colic, suprapubic pain, incontinence.

Always remember

- All positive data should be mentioned. Some negative data are as important or even more important than positive ones e.g. if the chief complaint is vaginal bleeding, it is important to say that it is not associated with abdominal pain.
- The data flow spontaneously from the patient, but the task of organization is yours. Patients often have more than one complaint or concern. Each merits its own paragraph and a full description.
- Chief complaint: is the patient's statement of the problem and present history : is the history of that problem
- Description of the problem is a necessary step in obtaining a diagnosis, but description is not the diagnosis.
- The value of the history, of course, will depend on your ability to elicit relevant information. Your sense of what constitutes important data will grow exponentially in the coming years as you gain a greater understanding of the pathophysiology of disease through increased exposure to patients and illness. However, you already have the tools that will enable you to obtain a good history. That is, an ability to listen and ask common-sense questions that help define the nature of a particular problem.

Example of case history taking

Personal history:

A primigravida named Nagwa Zakaria Aref, aged 22 years from El Gomhoria street, Mansoura, secretary, married since January, 23, 2006 and has no special habits.

The husband named Ali Mohamed Fawzy, aged 30 years, teacher and has no special habits.

Complaint:

Bleeding per vaginum 2 days ago

Menstrual history:

Menarche was at the age of 12, cycles were regular , recurring every 28 days. Menstruation is 5 days duration and of average amount. There was associated dysmenorrheal but there was no intermenstrual pain, bleeding or discharge. The last normal menstrual period was at January, 16, 2006 giving an expected date of delivery at October, 23, 2006

Obstetric history: Primigravida

Past history:

Unremarkable apart from appendicectomy operation 3 years ago, in Mansoura university hospital and had no complication.

Family history:

Irrelevant apart from the mother is diabetic

Present History:

The condition started by cessation of menstruation since January, 16, 2006. One week after the expected date of menses the patient started to exhibit nausea, vomiting, perversion of appetite and frequency of micturition and so she performed urine pregnancy test which revealed positive result. She attended the antenatal clinic in Mansoura university hospital 3 weeks later where the doctor performed an abdominal ultrasound for her and informed her that she is pregnant in a single living fetus of 8 weeks duration and requested a hemoglobin which revealed 12 gm and blood group analysis which was O positive. 3 months later, the patient started to perceive fetal movement. The patient has had no serious problems to date , until she awoke 2 days ago early in the morning with mild dull lower abdominal pain and her underwear was soaked with fresh blood which was bright red in colour and it was not precipitated by intercourse. The baby was moving well and she had no contractions, nor did any water leak. She called immediately for a Taxi and arrived on emergency labour ward approximately 1/2 hour later and bleeding stopped 1 hour after arrival to the hospital.

She tells me that the doctor who saw her on admission did not feel that her symptoms required immediate delivery . Blood tests were sent to lab and she was given an injection of what she was told was steroid and commenced on cardiotocograph (CTG), which was normal. Also an abdominal ultrasound was done and she was told that the baby's growth was normal and the placenta was not low lying. An internal speculum was done and she was told that the cervix was closed, with no lesions and there was some old blood in the vagina.

The condition was not associated with symptoms of preeclampsia and no symptoms of approaching labour. There were no symptoms referable to urinary or GIT systems apart from frequency of urination.

Now ask yourself What is the provisional diagnosis?

The clinical picture is suggestive of a small placental abruption though I would perform examination and further investigations e.g. ultrasound to exclude placenta previa.

II- General examination

The general examination starts by noticing the gait, the height, the build and the configuration of the abdomen as the patient enters during history taking or in the examination room.

General condition:

Include the following items:

- 1- Built.
- 2- Nutrition
- 3- Complexion
- 4- Attitudes and gait.
- 5- Appearance of illness
- 6- Orientation

1- Built: include the following items (height, weight and configuration):

A) The height:

The patient should remove her shoes, stand erect, looking straight in a horizontal plane with feet together and knees straight. The heels, buttocks, shoulder blades and the back of the head should touch against the wall.

Height measurement

Short stunted patients usually have small pelves, however, a tallness does not exclude the presence of pelvic contraction.

B) The weight of the patient:

Weighing the patient must constitute a part of the regular examination during every antenatal visit. *By detecting a sudden increase in weight (or not enough weight gain), it may be possible to identify potential health problems for the mother or the fetus.* For example, a sudden increase in weight gain may indicate fluid retention (or 'edema') and possibly subsequent preeclampsia.

A good pattern for weight gain throughout pregnancy is about three pounds in the first trimester, 11 in the second, and 11 in the third. However, there is variability in patterns of weight gain during pregnancy.



Weighing the patient

No weight gain or loss in the first trimester and then 2 kg / month in the next 6 month i.e. 12 kg in average all through the pregnancy.

Pregnancy weight gain recommendations:

Prepregnancy weight	Total weight gain	Rate of gain for 2nd & 3rd trimesters
Normal Weight	25-35 pounds	1 pound per week
Underweight	28-40 pounds	more than 1 pound per week
Overweight	15-25 pounds	2/3 pound per week
Twins	30-35 pounds	1 1/2 pound per week

N.B: These are used as a guideline only... each woman and pregnancy is individualized. Nutritional counseling and assessment should be a part of antenatal care and proper adequate nutrition is encouraged for optimal health for the mother and her baby.

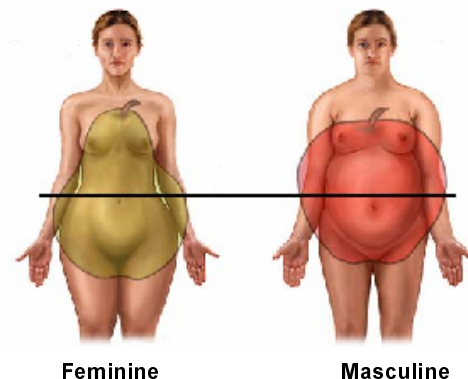
The following table provides recommended weight gain based on a woman's body mass index (BMI) at the beginning of the pregnancy.

Body mass index measures the weight-to-height ratio and is calculated by dividing weight (measured in kilograms) by the square of height (in meters). A normal BMI ranges from 19.8 to 26. For women whose BMI is normal, the recommended weight gain over the course of the pregnancy is 25 to 35 pounds. Women who are underweight, or have a low BMI, should gain more weight, and women who are overweight, or have a high BMI, should gain less.

BMI (kg/m ²)	Recommended weight gain
Low (BMI <19.8)	12.5-18 kg (28-40 lb)
Normal (BMI 19.8-26)	11.5-16 kg (25-35 lb)
High (BMI 26-29)	7-11.5 kg (15-25 lb)
Obese (BMI >29)	6+ kg (15+ lb)

C) Configuration (constitution):

The constitution is described as feminine or masculine. In feminine constitution, the pelvic girdle is wider than the shoulder girdle. The body curves are graceful and smooth due to relative excess of subcutaneous fat. The skin is of delicate texture with fine facial features. In masculine constitution, the shoulder girdle is wider than the pelvic girdle. The body curves are angulated. The facial features are relatively coarse. A masculine constitution in a female is usually associated with hyperandrogenism



- **A kyphotic patient:** Kyphosis is an abnormal degree of forward curvature of part of the spine. If the kyphosis affects the lower dorsal or lumbar spine, this results in the typical kyphotic pelvis.

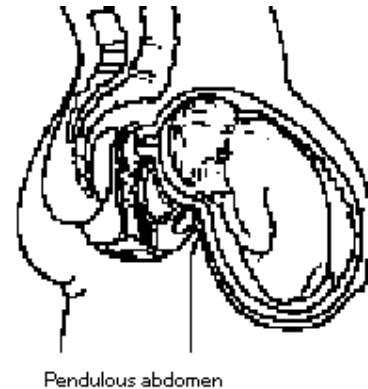
- **A short patient with a stocky build:** in cases of dystocia dystrophica syndrome, the patient is short and stocky, the neck is thick, the chest is broad and short, the long bones of limbs are short, and the wrists and ankles are heavy. The pelvic cavity is small with an android tendency (funnel pelvis).



- **The pendulous abdomen:**

Pendulous abdomen is best detected with the patient standing. In its extreme degree, the fundus of the uterus lies between the patient's thighs. It is due to weakness of the abdominal wall and hence the forward fall of uterus or due to overdistension of the uterus as in cases of oversized fetus, multiple pregnancy, polyhydramnios, fibromyomata with pregnancy.

Its occurrence in primigravida denotes the possibility of a severe degree of contracted pelvis. It may be cause of any abnormal position or abnormal presentation.

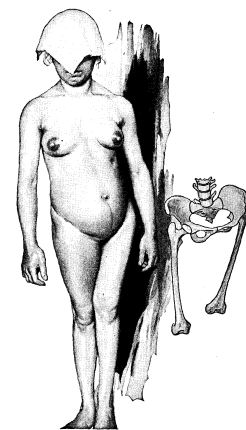


2- Nutrition: include the following items (weight, skin thickness and vitamin deficiency)

3- Complexion: include the following items (pallor, jaundice and cyanosis)

4- The attitudes and gait: gaits of obstetric significance are:

- **Waddling gait:** a distinctive duck-like walk in the pregnant patient near term and earlier in women with pendulous abdomen, multiple pregnancy or polyhydramnios. Weight gain, ligamentous laxity and alterations in spinal alignment contribute to the characteristic gait associated with the pregnant female.
- **Limping gait:** may be accompanied by abnormal pelvis (obliquely contracted pelvis).



Limping

5- The appearance of illness:

is observed by the examiner while the history is being taken, and is described as good, moderate, bad, very bad.

6- The orientation:

is described as unconscious, semiconscious or fully conscious, with reference to the general health; and/or anxious, irritable, neurotic or depressed, regarding the psychological status.

Vital signs:

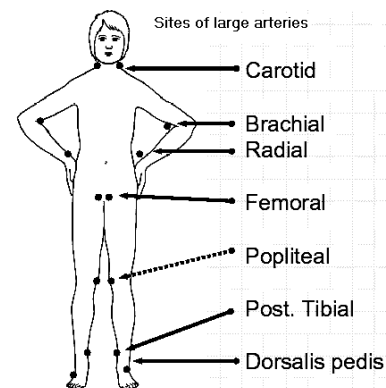
Vital signs are measurements of the body's most basic functions. The four main vital signs routinely monitored include the following:

- 1- Pulse rate
- 2- Body temperature
- 3- Respiration rate (rate of breathing)
- 4- Blood pressure

These numbers provide critical information (hence the name "vital") about a patient's state of health which are useful in detecting or monitoring medical problems.

Pulse:

This can be measured at any place where there is a large artery (e.g. carotid, brachial femoral, or simply by listening over the heart), though for the sake of convenience, radial is most commonly used



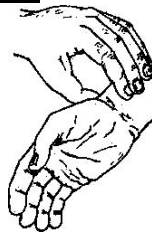
Normal pulse: usually around 72 beats per minute. Remember the pulse is affected by common factors

- Stress/anxiety
- Body temperature (+5 -10 beats/min/0C)
- Physical activity
- Pain
- Normal pregnancy: a slight increase above the basal pulse rate by (12 beat / minute) may occur.

Technique of measuring the radial pulse:



Measuring the radial pulse



Measuring the carotid pulse

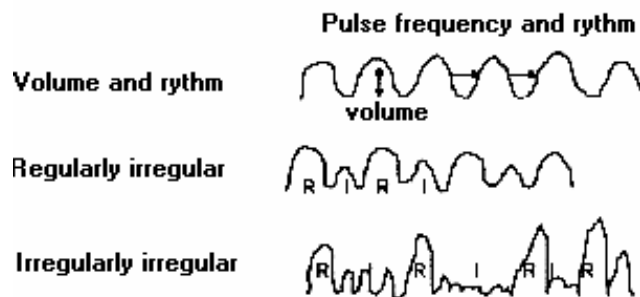
During palpation, note the following:

1. **Rate:** Measure the rate of the pulse (recorded in beats per minute). Count for 30 seconds and multiply by 2 (or 15 seconds x 4). If the pulse is irregular or the rate is particularly slow or fast, it is probably best to measure for a full 1 minute in order to minimize the impact of any error in recording over shorter periods of time.

Pulse rate may increase due to obstetric causes as internal hemorrhage as in ectopic pregnancy, external hemorrhage as in incomplete abortion, antepartum hemorrhage, maternal distress or exhaustion during labour, ...etc. or due to non obstetric causes as fibromyomata or ovarian tumours undergoing complications, heart diseases, etc.

2. **Regularity:** regular or irregular and when irregular whether it is regularly irregular or irregularly irregular

3. **Volume:** the volume is the amplitude of the pulse. This reflects changes in stroke volume. In the cases of hypovolemia, for example, the pulse volume is relatively low (weak or thready).



Temperature:

The normal core body temperature of a healthy, resting adult human being is stated to be (36.5° C to 37.2° C).

The normal range of human body temperature varies due to an individual's metabolism rate.

Body temperature also varies at different parts of the body. *Oral temperature*, which is the most convenient type of temperature measurement (37.0° C) is accepted as standard temperature for the normal core body temperature. *Axillary temperature* is an external measurement taken in the armpit or between two folds of skin on the body. This is the longest and most inaccurate way of measuring body temperature, the normal temperature falls to 36.4° C. *Rectal temperature* is an internal measurement in the rectum, which comes to 37.6° C. It is the least time consuming and most accurate type of body temperature measurement, being an internal measurement. But it is definitely, by far, not the most comfortable method to measure the body temperature of an individual.

N.B. A special thermometer can quickly measure the temperature of the ear drum, which reflects the body's core temperature.

The elevated temperature during pregnancy, labour, or the puerperium may be the result of an associated pathological lesion such as pyelitis, tonsillitis, ... etc.

The presence of this pyrexia is important on account of the following:

1. The causative lesion of pyrexia e.g. German measles may cause intra-uterine death of the fetus or congenital abnormalities such as deafness, blindness, congenital heart,... etc.
2. Prolonged pyrexia may lead to intrauterine fetal death.

Blood pressure: elevated blood pressure during pregnancy is a significant problem affecting many pregnancies. In some cases, the hypertension is pre-existing, while in others, it develops over the course of pregnancy. Occasionally, it does both.

Normal blood pressure changes during pregnancy:

During the middle trimester, blood pressure (both systolic and diastolic) normally drop below early pregnancy and prepregnancy levels. Not uncommonly, there is a widening of the pulse pressure (difference between systolic and diastolic levels). In the third trimester, blood pressure usually rises to approximately pre-pregnancy levels.

It was agreed upon to consider the upper-most limit of normality as 130 systolic over 90 diastolic. Any rise in either or both of these readings, is to be considered as an abnormal elevation of the blood pressure, and the case is managed accordingly.

The time of elevation of the blood pressure is important in differentiating between toxemia of pregnancy on one hand, and chronic nephritis, essential hypertension or other associated diseases on the other hand. In preeclampsia, hypertension occurs only during the second half or even the last trimester of pregnancy. In some cases, there is an early appearance of preeclampsia as in:

- (a) Vesicular mole.
- (b) Polyhydramnios.
- (c) Multiple pregnancy.
- (d) Preeclampsia complicating essential hypertension, chronic nephritis, or diabetes mellitus.

Technique of B.P. measurement:

Posture of the patient:

Whether the patient is sitting or lying (supine) makes no difference to the blood pressure readings, provided that the arm is in the correct position. Pregnant patients may suffer a profound fall in blood pressure when lying supine; therefore *in pregnancy all measurements should be performed with the patient either sitting or in the left lateral position.*



B.P. measurement in sitting position

Application of the cuff:

Tight or restrictive clothing should be removed from the arm. The position of maximal pulsation of the brachial artery in the arm, just above the antecubital fossa, is marked. A cuff with a long enough bladder should then be applied to the upper arm. As contact of the stethoscope with the tubing of the cuff may produce artefactual sounds, the tubing from the blood pressure cuff should not cross the auscultatory area.

Application of the cuff



The center of the bladder should be positioned over the line of the artery. The lower edge of the bladder should be 2-3 cm above the marked point. The cuff should fit firmly and comfortably and be well secured.

Position of arm:

The arm should be horizontal and supported at the level of the mid-sternum because dependency of the arm below heart level leads to an overestimation of systolic and diastolic pressures of about 10 mm Hg. Correspondingly, raising the arm above heart level leads to underestimation of these pressures

Position of manometer:

The mercury column of the sphygmomanometer must be vertical, at eye level, and not more than 3 feet from the observer at the level of the heart.

Palpatory estimation of systolic pressure:

1. Palpate brachial or radial artery pulsation.
2. Inflate cuff until pulsation vanishes.
3. Deflate cuff.
4. Estimate systolic pressure when you first palpate the pulse.



Palpatory method

Auscultatory measurement of systolic and diastolic pressure:

- 1- Place stethoscope gently over point of maximal pulsation of brachial artery.
- 2- Inflate cuff to 30 mm Hg above estimated systolic pressure.
- 3- Reduce pressure at rate of 2-3 mm Hg per second or per pulse beat.
- 4- Take reading of systolic pressure when repetitive, clear tapping sounds appear for two consecutive beats.
- 5- Take reading of diastolic pressure when repetitive sounds disappear.



Auscultatory method

Korotkoff sounds:

It is generally accepted that there are five phases of Korotkoff sounds. Each phase is characterized by the volume and quality of sound heard.

phase I: first appearance of clear tapping sound; marks the SBP

phase II: murmuring or swishing sounds

phase III: crisper sounds increasing in intensity

phase IV: sounds suddenly become muffled, marks DBP in pregnant women

phase V: sounds disappear; marks DBP

N.B. *In pregnancy a fifth phase (the point at which all sounds finally disappear completely) may not be identifiable, in which case the fourth (distinct, abrupt muffling sounds, which become soft and blowing in quality) is used as the diastolic pressure.*

Number of measurements: It is preferable to take one measurement carefully at each visit, repeating the measurement if there is uncertainty or distraction, rather than to make several hurried measurements. If the blood pressure is elevated above say 140/90 mm Hg, a second reading should be recorded after an interval of at least 1 min. For patients in whom sustained increases of blood pressure are being assessed a number of measurements should be made on different occasions (6 hrs or more apart after complete physical and mental rest) before definite diagnostic or management decisions are made.

Indications for measurement in both arms: Blood pressure should be measured in both arms in all patients with raised blood pressure at the initial assessment. It is suggested that if there is a reproducible difference of 20 mm Hg for systolic pressure and 10 mm Hg for diastolic pressure, decision making should be based on the limb with the higher pressure. Simultaneous measurement in both arms is indicated in patients with suspected coarctation of the aorta where local anatomical abnormalities are suspected.

White coat hypertension:

In many patients blood pressure is always higher when measured by doctors (and nurses) - this is the phenomenon of "white coat hypertension". Readings are likely to be lower when they are taken at home.

Respiratory Rate (RR):

Respiration rate is recorded as breaths per minute. It should be counted for at least 30 seconds as the total number of breaths in a 15 second period is rather small and any miscounting can result in rather large errors when multiplied by 4. This can be assessed by observing the rise and fall of the patient's chest while you appear to be taking their pulse so that the patient does not consciously alter their rate of breathing. The normal RR is between 12 and 20. Respiration rates may increase with fever, illness, and with other medical conditions.

Systematic examination:

After evaluation of the general condition and configuration and assessment of the vital signs, systematic examination is continued *from the head downwards to the feet*, leaving the local examination to the end.

The head and neck:

1. Scalp.
2. Ears.
3. Eye brows
4. Skin of face
5. Eyes
6. Nose
7. Mouth
8. Neck.

The breasts:

1. Signs of pregnancy:
 - a) Enlargement
 - b) Nodularity
 - c) Vascularity
 - d) Pigmentation and areolae
 - e) Montgomery follicles
 - f) Secretion.
2. Readiness for lactation
3. Infection.
4. Lumps and lesions.

Thoracic cage:

form, shape and configuration.

The lungs:

1. Associated diseases.
2. Effects of pregnancy.

The heart:

1. Associated diseases.
2. Effects of pregnancy.

Upper limbs:

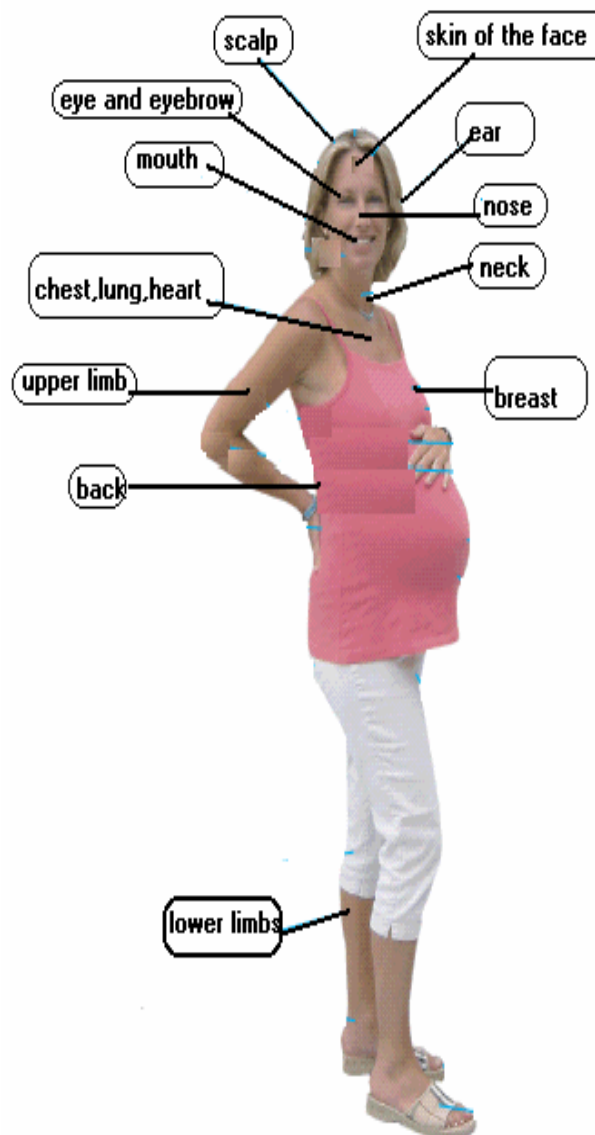
1. Configuration.
2. Hair distribution
3. Nutritional deficiencies
4. Edema
5. Specific lesions
6. Muscular development

Lower limbs:

1. Configuration.
2. Hair distribution
3. Nutritional deficiencies
4. Varicose veins
5. Edema.

The back: Spine.

Systematic (head to toe examination)



Examination of the head:

- **Head and scalp:** While the patient is facing forward:

- Inspect the head for size, symmetry and shape as box head (rachitic head)
- Evaluate the scalp hair for hair loss.
- Inspect and palpate the scalp for any skin lesions



Loss of hair from outer
1/3 of eyebrow

- **The eyes:**

- **The eyebrows:**

Inspect for loss of hair from the outer 1/3 of the eyebrow which is seen in hypothyroidism and syphilis.

- **The eyelids:**

Swollen (edematous) due to fluid retention as in preeclampsia, persistent cough and fatigue, however, it may be transient appearing only in morning when the patient is awake.



Eyelid oedema

the

- **The sclera:** inspected for jaundice

- **The conjunctiva:** inspected for pallor, jaundice, cyanosis, conjunctivitis, subconjunctival hemorrhage

- **The pupils:**

An Argyll-Robertson pupil in syphilis (pupils are small & irregular, not react to light but react to accommodation).

- **The eye ball:** look for exophthalmos as in thyrotoxicosis



Subconjunctival hemorrhage



Exophthalmos

- **The ears:** look for any abnormalities as cyanosis

- **The nose:** inspected for

- Saddle nose (as in congenital syphilis)
- Working ala nasi (as in severe dyspnea)
- Sulphur granules (in nutritional deficiencies)



Saddle nose

N.B. Nasal congestion and bleeding are common during pregnancy

- **The skin of the face:** inspected for

1. Chloasma uterinum

(The mask of pregnancy or chloasma is normal. This consists of irregular brownish patches around the eyes or across the bridge of the nose)



Chloasma uterinum

2. Malar flush in cases of mitral stenosis
3. Puffiness in cases of salt and fluid retention
4. Yellowish skin in cases of jaundice.
5. Excessive hirsutism
6. Butterfly rash of s. lupus
7. Acne.
8. Dry skin in dehydration



Hirsutism



Acne



Rash of s. lupus

• **The mouth:**

- **Lips:** The inner lip is examined for pallor & manifestations of nutritional deficiency



Inner lip



Outer lip

- and the outer lip is examined for cyanosis.

- **Gums:** examined for edema, swelling, bleeding on touch (Gingival enlargement with bleeding is common during pregnancy)



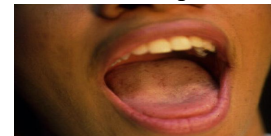
- **Teeth:** examined for the presence of any septic focus or caries

Teeth & gums

- **Tongue:** examined for manifestations of deficiencies such as pellagra (bright red), or anemia (pallor), jaundice (yellowish) or cyanosis (blue)



Tongue (ventral surface)



Dorsal surface

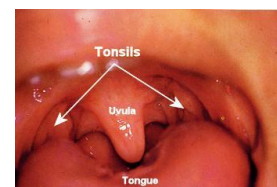
- **Mucous membrane of mouth:** retract, inspect, palpate both sides for color changes elevated or depressed lesions, masses.



Buccal mucosa



- **Tonsils:** examined with the aid of tongue depressor and have patient say "Ahh". Notice infected tonsils which may be a cause of puerperal sepsis after labour.



▪ **Breath:**

- Fetid smell as in chronic pyorrhea (in DM)
- Acetone: as in DM
- Feter hepaticus: as in liver cell failure - Ammonia: as in renal failure

as

Examination of the neck:

• Thyroid gland:

▪ Inspection:

1. You stand in front of the patient
2. Ask the patient to swallow with the neck hyperextended
3. Inspect free mobility of the thyroid gland. Note whether it is visible and symmetrical. A visibly enlarged thyroid gland is called a goiter.



Thyroid gland inspection

▪ Palpation:

- 1- Move to a position behind the patient and now have the neck flexed]
- 2- Identify the cricoid cartilage with the fingers of both hands.
- 3- Move downward two or three tracheal rings while palpating for the isthmus.
- 4- Move laterally from the midline while palpating for the lobes of the thyroid.
- 5- Note the size, symmetry, and position of the lobes, as well as the presence of any nodules. The normal gland is often not palpable.



Thyroid gland palpation

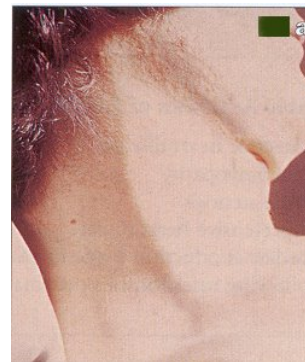
Hypothyroidism may be a cause of abortion, preterm labour or toxemia of pregnancy. On the other hand, hyperthyroidism could be responsible for abortion, premature labour heart failure and post-partum hemorrhage.

• Blood vessels:

Venous pulsations and arterial pulsations must be looked for, as they may give an idea about the cardiovascular state of the patient.

Technique of Jugular venous pressure measurement:

- A. Examination position: the head of bed elevated at 45 degree angle (semisitting position) to minimize the pressure gradient between the neck veins and the right side of the heart. The head of the patient is turned to the right.
- B. Identify top of venous pulsation in neck (JVP): jugular venous pulsations are inward while carotid artery pulsations are outward.
- C. Identify the sternal angle (angle of Louis): located at superior edge or notch of sternum.

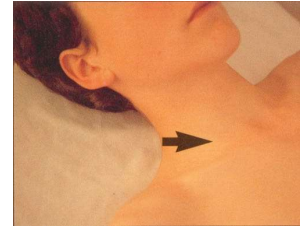


Congested neck veins

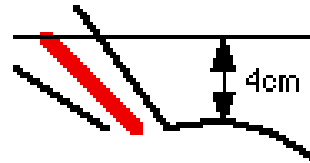
D. Measure the distance between the top of pulsation and sternum in centimeters

Normally the distance between JVP and sternum is 4 cm or less. If increased > 4 cm, it indicates jugular venous distention (congested neck veins) which may occur in the following:

1. Right-sided [heart](#) failure (most common)
2. Constrictive [pericarditis](#)
3. Tricuspid stenosis
4. [Superior vena cava obstruction](#)
5. Valsalva phenomenon (laughing, coughing)



less.



• **Lymph nodes:**

The presence of enlarged lymph nodes in the neck may be a manifestation of a local or general diseases, either of which can affect the course of pregnancy.

Superficial lymph nodes:

Systematically palpate with the pads of your index and middle fingers for various lymph node groups.

1. Preauricular: in front of the ear
2. Postauricular: behind the ear



pads
the

Preauricular

Postauricular

3. Occipital: at the base of skull
4. Submandibular: under the jaw on the side
5. Submental: under the jaw in the midline
6. Superficial (anterior) cervical: over and in front of the sternomastoid muscle
7. Supraclavicular: in the angle of the sternomastoid and the clavicle



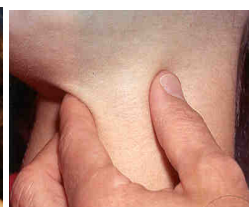
Occipital



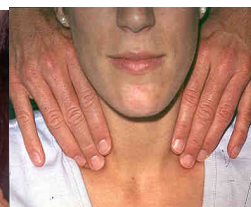
Submandibular



Submental



Anterior cervical



Supraclavicular

Deep lymph nodes:

The deep cervical lymph nodes lie below the sternomastoid and cannot be palpated without getting underneath the muscle:

Note the size and location of any palpable nodes and whether they were soft or hard, non-tender or tender, and mobile or fixed.

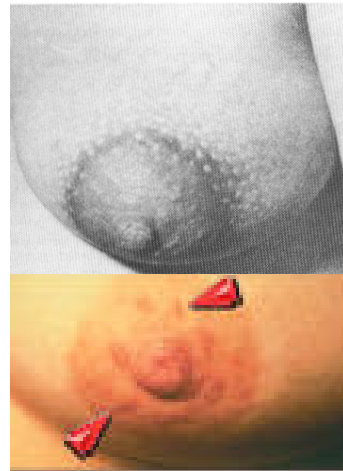


Deep cervical

Examination of the breasts: the breasts are examined for:

1- Breast signs of pregnancy:

- Breasts become enlarged, soft, warm, knotty, and tender.
- Nipple and "primary areola" become deeply pigmented.
- Develop darker, wider secondary areolae and Montgomery tubercles (10 to 20).
- Have visible network of superficial veins.
- Colostrum (clear serous secretion) produced.



These signs are only significant in the primigravida.

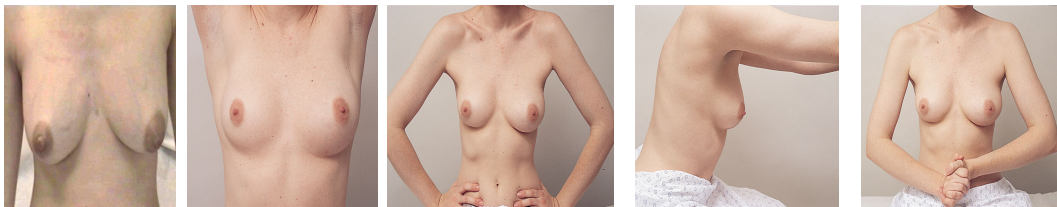
Montgomery's follicles

2- Presence of a lump or other associated lesions:

Though this is not specifically obstetrical, yet the breasts, being a common site of cancer in the female, should always be examined for a lump or other associated lesions.

Inspection:

Inspection positions: see illustration



Arms at sides

Arms raised

hands pressed against hips

leaning forward

palms pressed together

Inspection of both breasts for:

- a- Size, shape or contour and asymmetry.
- b- Skin for thickening, edema, scars and venous pattern.

c- The nipple for size, shape, direction, ulceration, retraction and discharge.



Lump & nipple retraction

Peau d'orange

Breast asymmetry

Raising the arms over the head, or pressing the hands against the hips cause the pectoral muscles to become tensed allowing for inspection of:

a- Asymmetrical excursion of breasts or nipple not otherwise visible.

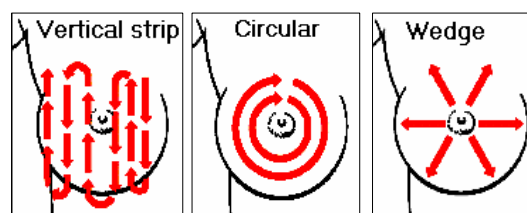
b- Dimpling and retraction in cases of cancer because the fiber strands of cancer attach to both breast skin and the fascia overlying the pectoral muscle.

Also, leaning forward allows detection of pendulous breast and slight asymmetry.

Palpation:

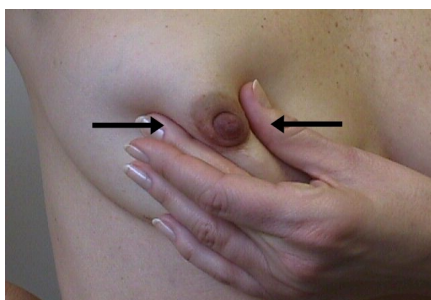
place a small pillow under the shoulder with the ipsilateral arm over the head.

Then palpate using the proximal and middle phalanges of the fingers. Follow

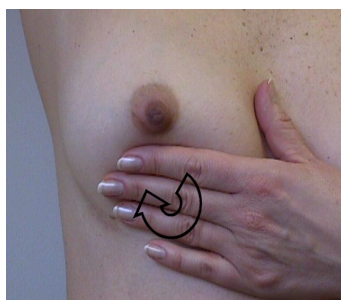


systematically in a circular pattern around the nipple or in vertical segments or in a wedge pattern (see the illustration), until you palpate the entire breast including the tail. Then you feel and compress the areola about its circumference and gently squeeze the nipple for any discharge (note the color, amount and consistency).

In the presence of a mass, note the site, size, shape, borders, consistency, mobility.



Check for discharge



Palpation with circular motion



Sometimes, use 2 hands

Examination of the axillary lymph nodes:

- Stand in front of the patient and have the patient relaxing her left hand over your right arm.
- Feel for both the apical and medial nodes with your right hand.
- Roll the soft tissue of the axilla over the ribs with your fingers. While supporting the anterior axillary fold, attempt to feel the anterior (pectoral) axillary nodes.
- Move slightly posteriorly or dorsally and attempt to feel the lateral axillary nodes by rolling your fingers under the humerus.
- While supporting the posterior axillary fold, feel the posterior axillary nodes (subscapular).
- Repeat these steps for the opposite side.
- Repeat the examination in the recumbent (supine) position.

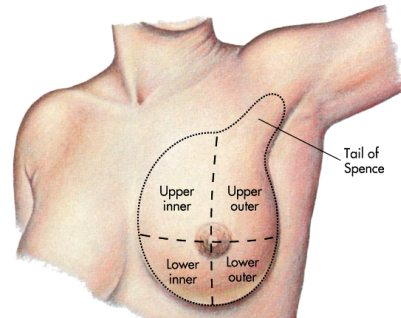
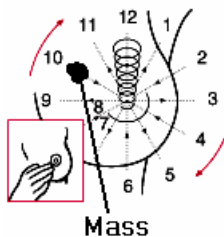


Examination of axillary LN



?Examination of LN in recumbent position

- A mass or pathological finding may be located by the quadrant. The breast is divided into 4 quadrants (upper and lower outer quadrants and upper and lower inner quadrants).
- A mass or finding may be located in reference to the face of a clock by the "time and distance from the nipple. Example: 2-3 cm stony mass, palpated 4 cm from the nipple at the 10 o'clock position.

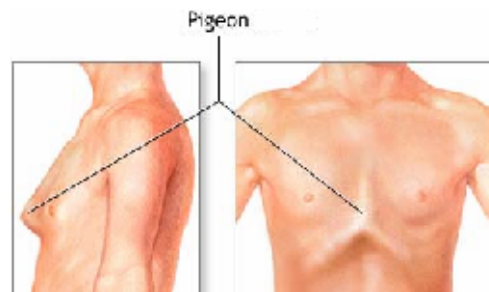


Examination of the chest:

• The thoracic cage:

- Chest shape
- Harrison's sulcus

A pigeon shaped chest and Harrison's sulcus may signify an old attack of rickets that may be associated with contracted pelvis (flat rachitic or a generally contracted rachitic pelvis).



• **The lungs:**

The student should be able to perform an examination of the lung including:

1. Inspection
2. Palpation
3. Percussion
4. Auscultation

Associated lung diseases as tuberculosis influences the management of pregnancy, labour, puerperium, infant feeding and post-natal care. Other lung diseases such as bronchiectasis, emphysema, chronic bronchitis, and bronchial asthma should be looked for, as these sometimes cause abortion, premature labour or general ill health.

• **The heart:**

Thorough examination of the heart is essential in every obstetric case. The student should be able to perform an examination of the praecordium including:

1. Inspection
2. Palpation for the apex beat, thrills and heaves
3. Auscultation of the heart

Organic heart diseases are encountered in about 2% of pregnant patients , and their presence influences the management of pregnancy, labour and the puerperium.

The main pathological lesions are:

- Myocardial disease as auricular fibrillation and paroxysmal tachycardia
- Valvular disease such as mitral stenosis, double mitral and aortic regurge
- Hypertensive heart disease

Examination of the limbs:

• **Upper limbs:**

- 1- Look for asymmetry, deformity, scars and swellings.
- 2- The epitrochlear lymph nodes are palpated a little above the medial epicondyle of the humerus and best with flexion of the elbow. It is enlarged in cases of syphilis.
- 3- The skin is examined for texture and elasticity, thickness, eruptions or pigmentation and abnormal hair development.



Palpation of epitrochlear nodes

4- The finger nails are examined for:

- Color changes (pallor or cyanosis).
- Nail dystrophy with transverse ridges, pitting and loss of luster (common with chronic infections, myxedema and malnutrition).



Nail dystrophy



Koilonychia (spoon nails)

- Nail Koilonychia in which the normal convexity is replaced by flattening or concavity. The nails are also thin and brittle. This condition is seen in cases of iron deficiency anemia, diabetes and malnutrition.



Finger Clubbing

5- Finger clubbing denotes an increase in the longitudinal and lateral convexity of the nail due to hypertrophy of the tissues at the nail bed. It can be familial, occupational (one or more finger affected) or mostly due to chronic systemic diseases.

6- The palmer surfaces of the hands are examined for sweating, pallor, erythema.

• **Lower limbs:** the lower limbs are to be examined for

1. General configuration and bony diseases such as bow-legs, knocked knees, sabre tibia (syphilitic), feet abnormalities, evidence of old fractures. Lesions of the bones or joints of the lower limbs may affect directly the size and shape of the pelvis, particularly if these lesions took place during infancy or childhood.



Hip dislocation



Bow legs



Knock knee

2. Hair distribution and manifestations of nutritional deficiency, such as pellagic rash, tender calf, nutritional edema or hypocalcaemia.

3. Varicose veins: Varicosity increase during pregnancy due to:

- Increased vascularity of the pelvic vessels and their tributaries.



Deep v. thrombosis



Varicose V.

- Pressure of the enlarging uterus on the main venous trunks of the lower limbs.
 - The effect of a certain hormones (relaxin) acting directly on the wall of the vein, leading to its dilatation even very early in pregnancy.
4. Deep vein thrombosis
 5. Edema. This is perhaps the most important sign to look for in the lower limbs. Edema in the lower limbs may show as pitting or non-pitting (lymphatic) edema.

How to check for edema:

- Observe for edema of the foot, ankles and legs. Gently compress the patient's soft tissue with your thumb over both shins for a few minutes. Observe for indentation.

Normal: normally, there is no indentation.

Note: in bed-ridden patients, examine for edema over the sacral and coccygeal areas.

When edema is noted describe whether it is unilateral or bilateral, severity (graded from 1 to 4+) and whether it is soft or hard pitting.



Pitting edema LL(pretibial)

Pitting edema (foot)

Lymphedema

Causes of edema:

A) Bilateral:

- Physiologic edema of pregnancy
- Congestive heart failure: bilaterally symmetrical soft pitting edema.
- Hypoalbuminemia: extremely soft pitting, bilateral and thin skin.
- Nephrotic syndrome: bilaterally symmetrical soft pitting edema
- Pretibial myxedema: hard non-pitting.

B) Unilateral:

- Deep vein thrombosis: unilateral soft pitting .
- Chronic venous stasis: firm pitting with hyperpigmentation & thickening of skin.
- Lymphoedema: hard non-pitting with thick peau-de-orange skin.
- Cellulitis: unilateral, soft to firm tender with red warm skin.

Edema grading:

Grade 1: edema involves mostly the foot and ankle region (ankle edema).

Grade 2: it extends to the leg but stops short below knee (leg pretibial edema). **Grade 3:** it extends above the knee and involves the thigh.

Grade 4: extends involve the lower anterior abdominal wall and lower back.

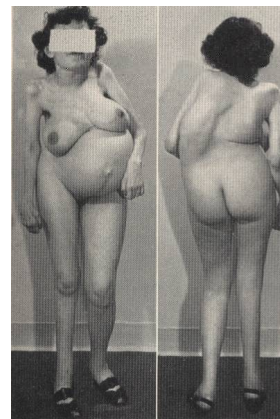
Examination of the back:

The back is examined, with special stress on the spine, sacroiliac joints and muscles of the back.

• The spine:

Diseases and changes in the spine may lead to major changes in the pelvis e.g.

1. Lumbar kyphosis leads to kyphotic pelvis.
2. Scoliosis may result in obliquely contracted pelvis.
3. Spondylolisthesis or falling forward of the last lumbar vertebra, in front of the promontory of the sacrum, leads to marked contraction of the pelvic inlet (Spondylolisthetic pelvis).
4. High assimilation (i.e. sacralisation of the last lumbar vertebra) and low assimilation (i.e. lumbarisation of the first piece of the sacrum) , lead to changes in the obliquity of the pelvic inlet with their sequelae.



kyphoscoliosis



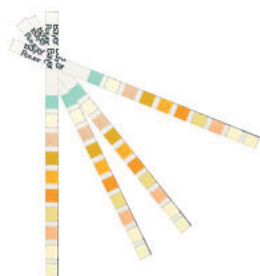
Scoliosis



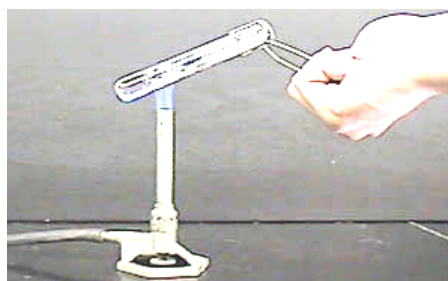
Spondylolisthesis

Urine examination: for protein and glucose. It should be part of examination of pregnant female.

• Protein:



Dipsticks



Boiling test

During pregnancy, it is normal for the kidneys to excrete small amounts of protein. However, large amounts of protein in the urine (or 'proteinuria') can be a physical sign of

very high blood pressure during pregnancy or preeclampsia. (Occasionally, proteinuria will be a physical sign of a urine infection or underlying kidney disease.)

In practice, protein in urine is tested for by:

- 1- **Albustix reagent strips:** rapid urine screening test in the form of reagent strips, known as 'dipsticks'. In the case of protein it usually changes from yellow to a darker shade of green. The depth of colour depend on the concentration of protein. So, the results of a dipstick test will show as 'negative' or 'a trace' or 1+, 2+, 3+ or 4+.
- 2- **Heating or boiling test:** On boiling urine, a precipitate or a cloud occurs that does not disappear by adding acetic acid in cases of proteinuria
N.B. It is normal to obtain results of a trace to 1+ during pregnancy, either because of the small amount of protein present in the urine or because extra vaginal discharge during pregnancy affects the reagent on the stick. A reading of 2+ or above is considered significant and may be of concern.

Proteinuria is not considered abnormal until it exceeds 300 mg in 24 hours.

• **Glucose:**

Testing urine for glucose is done in the same way as testing for protein, with reagent strips known as 'dipsticks'. When the dipstick is soaked with urine, the glucose indicator changes colour to a khaki green colour. *The presence of glucose in urine during pregnancy is not an indicator for diabetes as the renal threshold for glucose may be lowered so that small amounts of glycosuria may be present. So confirmation of diabetes can only be tested for with a glucose tolerance test.*

III- Abdominal examination

Abdominal regions:

Topographically, the abdomen can be divided into right and left upper and right and left lower quadrants by vertical and horizontal lines through the umbilicus.

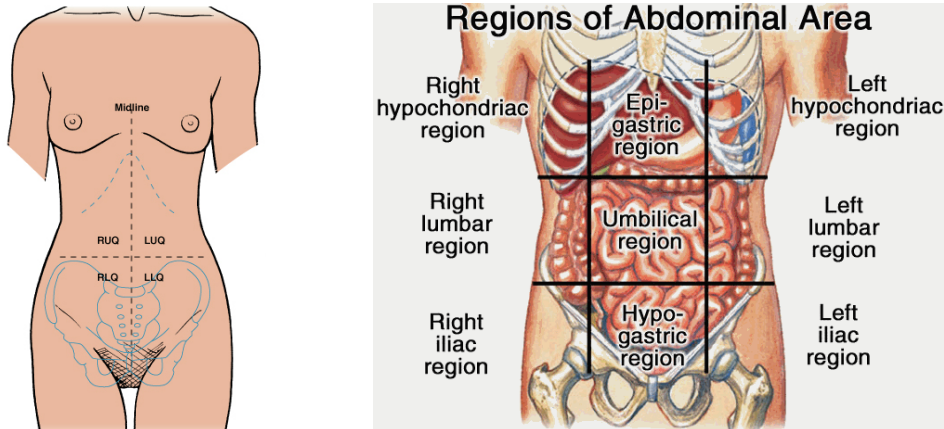


Diagram of abdominal regions and outline of underlying organs.

- RUQ:** Liver, Gallbladder, Duodenum, Pancreas, R Kidney, Hepatic Flexure
- RUQ:** Cecum, Appendix, R Ovary & Tube
- LUQ:** Stomach, Spleen, L Kidney, Pancreas, Splenic Flexure
- LUQ:** Sigmoid, L Ovary & Tube

The abdomen may also be divided into nine regions by two longitudinal lines (right and left midclavicular lines) and two transverse planes (subcostal and interspinous planes). The regions are: right and left hypochondria, right and left lumbar, right and left inguinal (or iliac), epigastric, umbilical and hypogastrium.

These regions form the basis of medical nomenclature when describing the location of a mass, an organ or pain distribution.

- 1- Epigastric:** liver, stomach, pancreas
- 2- Right hypochondrium:** liver
- 3- Left hypochondrium:** stomach (fundus), spleen
- 4- Right lumbar:** ascending colon, lower pole of right kidney
- 5- Umbilical:** small intestine, transverse colon, greater omentum
- 6- Left lumbar:** descending colon, lower pole of left kidney
- 7- Right iliac:** caecum, appendix, right ovary, right ureter
- 8- Hypogastric (pubic):** bladder, uterus (pregnant), small intestine
- 9- Left iliac:** sigmoid colon, left ovary, left ureter

N.B. Posteriorly we have the loin:

- 1- Medial boundary is the lateral border of the sacrospinalis muscle
- 2- Lateral boundary is the midaxillary line
- 3- Upper boundary is the last rib
- 4- Lower boundary is the iliac crest

The **renal angle** is the angle between the lateral border of the sacrospinalis muscle and the last rib

McBurney's point:

is 1/3rd the distance along an imaginary line drawn from the anterior superior iliac spine to the umbilicus; it represents the approximate position of the appendix in a non-pregnant adult.

Preparation for examination:

The fundamental steps of abdominal examination namely inspection, palpation, percussion and auscultation apply to pregnant woman.

There are several points to remember prior to beginning the abdominal examination. These include:

1. Have patient empty bladder before examination
2. A warm room, proper lighting and warm hands to examine the abdomen
3. The patient lies comfortably with the head just a little elevated and well supported.
4. Examination is performed from the patient's right side.
5. Undrape abdomen from above xiphoid process to symphysis pubis. Groin area should be visible with genitalia draped.
6. Examine all abdominal regions.

Abdominal inspection: Observe the following:

- 1- Abdominal contour
- 2- Abdominal skin
- 3- Abdominal movements

1- Abdominal Contour:

In inspecting for the contour, two positions have to be inspected: one at the side of the bed along a line passing trans-umbilical from one flank to the other and the other at its foot along a line passing from the symphysis pubis to the umbilicus and thence to the xiphi-sternum, with the observer's eyes on the plane of the abdomen . In the first position, any irregularity in the vertical plane is evident, while in the second the irregularity in the transverse is evident



A) Normal contour:

In healthy non-obese non pregnant females, the abdomen is usually flat from xiphoid to symphysis pubis, and the umbilicus is located in the abdominal center. However, depending on the nutritional status, the abdominal contour may be slightly protuberant (convex) or slightly scaphoid (concave).

B) Abnormal contour:

❖ **Diffuse enlargement of the abdomen:** is usually caused by *the Fs of abdominal distention*

- 1- Fat (obesity)
- 2- Fluid (ascites)
- 3- Feces
- 4- Fetus (pregnancy)
- 5- Flatus (gas)
- 6- Fibroid
- 7- Full bladder
- 8- False pregnancy
- 9- Fatal growths (tumors)



Diffuse enlargement of the abdomen

N.B. In ascites, when the patient is in supine position, the flanks of patient is bulging, the shape of abdomen is like frog (frog abdomen).

Both the patients with massive ascites and obesity have abdominal distention, umbilicus is usually deeply inverted in obesity and everted in long standing ascites

❖ **Localized abdominal enlargement:**

- Upper abdominal fullness (pulge): may result from a mass in the upper abdominal structures, such as liver, pancreas, stomach or transverse colon.
- Lower abdominal (suprapubic) fullness (pulge) may result from bladder distention, pregnancy or masses from the ovaries, uterus or colon

N.B. the mass or tumor may be on the abdominal wall or in the abdominal cavity, how to differentiate, you can ask patient to make abdominal muscles contract (try to sit up in bed unsupported), if the tumor is more distinct the tumor is in the abdominal wall, if the tumor is not distinct the tumor is intraabdominal.

❖ **The transverse diameter > the longitudinal diameter:**

Normally the vertical line is longer than the transverse one.

In some cases, however, the transverse line may approach or even exceed the vertical one, as in the following conditions:

1. Transverse lie of the fetus.
2. Multiple pregnancy.
3. Polyhydramnios.
4. Fibromyomata or ovarian tumours with pregnancy.
5. Associated conditions causing transverse abdominal enlargement such as ascites, splenomegaly or hydronephrosis.

❖ **Irregular contour of the abdomen:** is encountered in the following conditions:

1. Congenital anomalies of the uterus.
2. Advanced ectopic pregnancy.
3. Rupture uterus with escape of the fetus into the peritoneal cavity.
4. Fibromyomata and ovarian tumours associated with pregnancy,
5. Other abdominal tumours associated with pregnancy such as splenomegaly or kidney tumours.

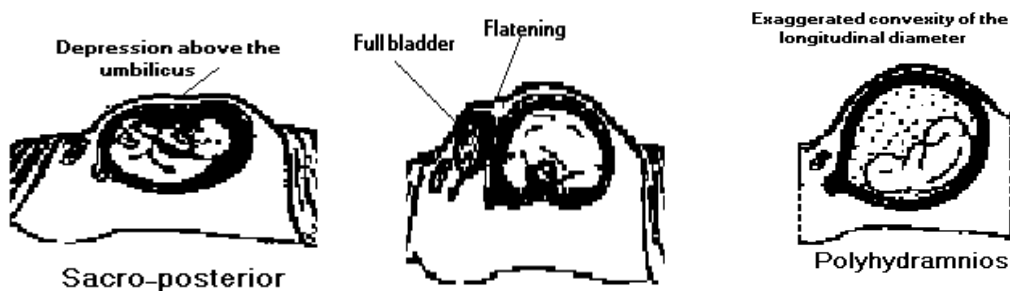
❖ **Abdominal retraction:** i.e. anterior abdominal wall is much lower than the level from xiphoid to symphysis pubis.

Generalized abdominal retraction (scaphoid abdomen), mainly seen in severe malnutrition, cachexia, acute diffusive peritonitis due to muscle rigidity.

Localized retraction: mainly seen due to contraction of scar of previous operation.

N.B. Late in pregnancy and during labour, the contour along the longitudinal diameter may be altered by changes in the position of the fetus, full bladder, fibromyomata of the uterine muscle, pathological retraction ring, polyhydramnios or by lesions of the anterior abdominal wall.





2- Abdominal skin:

a. **Skin eruptions:** in some diseases especially infectious disease or due to drug eruptions

b. **Pigmentation:** as linea nigra

c. **Stria or stretch-marks:**

(striae rubra and striae albicantes) which is caused by disruption of elastic fibers in skin reticulum due to obesity, pregnancy (striae gravidarum), ascites and expanding tumors.



Stria or stretch-marks



Linea nigra

d. **Surgical scars:** when you find a operation scar on the patient abdomen, you should ask some question about the scar, when and why the patient got the scar, the history of operation may be helpful to diagnosis of the disease as they provide clues to the purpose and extent of previous abdominal operations.

The site, type, length and healing pattern should be reported. Remember that scars must match history.

The small, multiple scars characteristic of minimally invasive surgery (e.g. laparoscopy) should not be overlooked.

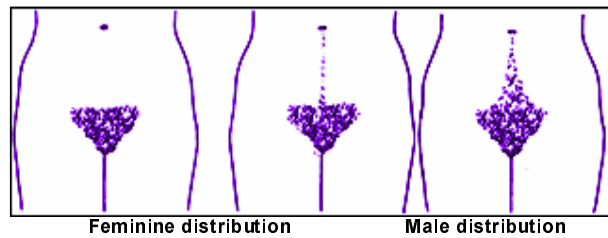
e. **Sinuses or fistula**

f. **Dilated veins:** in healthy person abdominal vein can not be seen or can be seen a little in thin person, but not dilated. In patient with obstruction of the portal venous system, you may find distended veins in the epigastrium & around the umbilicus while in patient with obstruction of the vena cava, you may find distended veins in the flanks.

g. **Hair distribution:**

Feminine pubic hair is roughly triangular with the base above the symphysis, where as in male type it is in the shape of a diamond often with hair continuing to the umbilicus.

A patient with such a male distribution of hair is more liable to have a male type of pelvis



h. **Umbilicus:**

- **Site:** normally midway between the xiphisternum & symphysis pubis. It is deviated up by pelvic or lower abdominal tumours and deviated downwards in ascites
- **Shape:** normally it is inverted. It may be flat or everted in cases of abdominal distension and increased intrabdominal pressure as in pregnancy and ascites
- **Pigmentation:** may occur in intrabdominal malignancy
- **Periumbilical ecchymosis (Cullen's sign):** which is a late sign of intraperitoneal hemorrhage. Originally described with ruptured ectopic pregnancy.
- **Discharge:** from umbilical infection or from fecal or urinary fistula
- **Umbilical nodule:** a hard dermal or subcutaneous nodule at the umbilicus secondary to metastatic cancer (usually from an intraabdominal primary tumor)
- **Caput medusa:** dilated, tortuous, superficial veins radiating upwards from the umbilicus

- i. **Edema in the abdominal wall:** appear as "Peau d'orange" of the skin, particularly in the lower part of the abdominal wall. Also the marks of the underwear can be noticed



Edema abdominal wall

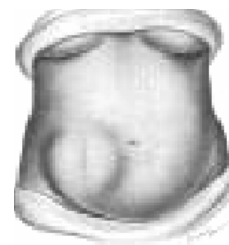
j. **Subcostal angle:**

Widened in chronic increase of intraabdominal pressure as in ascites

k. **Hernial orifices:**

Ask the patient to cough and look to hernial orifices

- Umbilical hernia may be seen in pregnant patient or patient with a massive ascites
- Incisional hernia in operation scar
- Femoral hernia
- Inguinal hernia

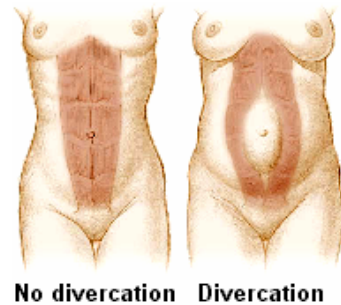


Incisional hernia



Umbilical hernia

I. Divercation of the recti (Diastasis recti):



Midline separation of rectus abdominus muscles result in a midline bulge with straining. It can be elicited by asking the patient to lift the head from the examination table. The condition may first appear during the second trimester, may become more pronounced in the third trimester and sometimes persists after delivery.

2- Abdominal movements:

a. Movement with respiration:

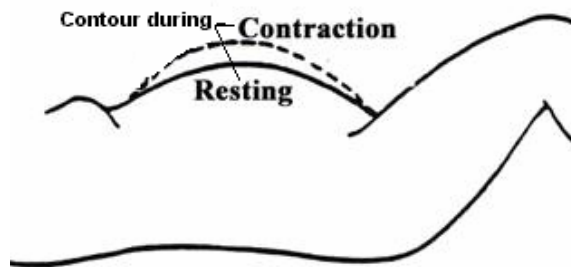
Abdominal respiratory movements can be easily seen in early pregnancy. As the patient approaches term, the nature of the respiratory movements changes into a thoracic one, and the abdominal respiratory movements will then be minimal. Marked restriction of the abdominal respiratory movements is seen in painful abdominal conditions.

b. Movement of pregnancy and labour:

i. Fetal movements

ii. Uterine contractions: cannot be seen except in late (24th week or later).

During these contractions, the contour of the abdomen changes as the uterus moves forwards with every contraction. During labour, these contractions becomes more manifest.

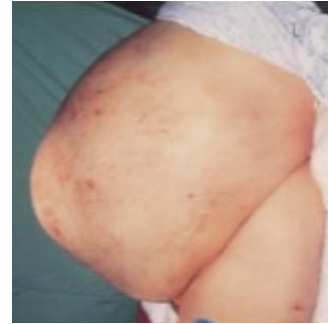


c. Associated movements:

- **Visible transmitted pulsations:** aortic pulsation can be visible in thin patients and with aortic aneurysm or tortuosity of the aorta
- **Peristaltic movements:** Occasionally visible in thin patients, it may be normal but consider intestinal obstruction.

Inspection with the patient standing:

Before finishing with inspection, inspect the abdomen with the patient standing. This is particularly helpful for the diagnosis of pendulous abdomen and the detection of shelving and different hernias



Inspection (patient standing)

Abdominal palpation:

I- General abdominal palpation:

- A) Superficial palpation
- B) Deep palpation:
 - 1) Palpation of abdominal organs
 - 2) Palpation of masses
 - 3) Special tests

A) Superficial (light) palpation:

- Light pressure is applied on the abdominal wall in a systematic pattern over abdominal quadrants.
- Light palpation is used to assess: tenderness, rigidity and superficial masses
- 1) **Abdominal tenderness:** if there is tenderness then define the extent and describe severity.
- 2) **Abdominal rigidity (guarding):** i.e. (abdominal wall contraction that resists palpation)
- 3) **Superficial (intramural) masses:**

Describe site (whether it is intrabdominal or in the abdominal wall), size, shape, consistency, tenderness, mobility in the different directions and with respiration.

If it is unclear if a mass is in the abdominal wall or in the peritoneal cavity, asking the patient to lift the head may help distinguish the mass. The rectus muscles will tighten, obscuring an intraperitoneal mass.

B) Deep palpation:



One-handed technique



Two-handed technique

- One or two-handed technique may be used. For two-handed, one hand is placed flat on abdomen, the other hand is placed on top of the first. The top hand applies pressure to the distal fingers of the bottom hand, which palpates
- We must use the pad of the hand to palpate so that the fingertips do not dig in (which produces much more discomfort for the patient),
- Push as deep as the patient will allow without significant discomfort
- The palpating hand should be positioned, and pressure exerted, during expiration. During inspiration, the palpating hand should be held steady (The diaphragms descending during inhalation will move the abdominal viscera under the hand, allowing the appreciation of organs and masses).
- The palpating hand is lifted and moved while the patient breathes out
- Deep palpation is used to assess abdominal organs and abdominal masses regarding site, size, shape, consistency, edge, surface, mobility, tenderness and pulsation.

1) **Palpation of abdominal organs:**

Liver:

Abnormal pregnancies e.g. hyperemesis gravidarum and severe cases of preeclampsia may cause serious liver damage.

The liver is palpated for:

Size: expressed in finger-breadth or centimeters below the costal margin

Edge (border): may be sharp as in cirrhosis or rounded as in congested liver

Surface: smooth as in hepatitis & CHF or nodular as in tumor or cirrhosis

Consistency: soft as in congestion & inflammation, firm as in cirrhosis and hard as in malignancy.

Tenderness: as in hepatitis, congestion and malignancy

Pulsatility: as in tricuspid regurgitation.

Spleen:

Many diseases that cause splenic enlargement, affect the course of the pregnancy and labour. Also, huge enlargement of the spleen, as encountered in cases of endemic hepatosplenomegaly, sometimes causes exaggerated obliquity of the uterus with its sequelae of malpresentations.



Bimanual palpation of the spleen

Characters of splenic swelling:

- Mass in the left hypochondrium descending below the left 10th rib and enlarging downwards and medially in a line towards the umbilicus
- Often has a palpable notch on the medial border (pathognomonic).
- Moves with respiration and can not get above it
- Dullness to percussion and the dullness is continuous with the normal splenic dullness, which is along the axis of the tenth rib.
- It is impossible to insinuate the hand between the spleen and the left costal margin.
- Can be brought forward by lifting the lower ribs
- Can not be balloted

Kidney:

Examination of the obstetric case during pregnancy is never complete , unless the loins are palpated and the costorenal angles and the suprapubic region are examined for any tenderness or masses.



Palpation of the right kidney

Characters of a renal mass: renal mass is usually smooth with rounded surface ballotable and with a band of resonance in front.

2) Palpation of abdominal masses (swellings):

1. **Site:** abdominal swellings may be intraperitoneal or retroperitoneal. The site of the mass is described according to the quadrants or regions of the abdomen and its relation to the surrounding structures. Pelvi-abdominal swellings are differentiated from purely abdominal swellings by failure to get below the swelling or to palpate its lower border.
2. **Size:** you can estimate the size of mass in terms of diameters in at least 2 of the 3 dimensions. Also, it can be described in relation to familiar objects, like peanut, bean, egg, fist, baby's head and so on. Also we can describe the size of a mass compared with the size of the gravid uterus in terms of weeks of pregnancy specially with pelvi-abdominal swellings.
3. **Shape:** may be rounded or globular, oval, triangular, quadrangular or irregular, ...etc.
4. **Surface:** smooth, lobular, nodular (coarse or fine nodularity), granular, irregular, etc.
5. **Surrounding structures:** assess the mobility of the lump. Is it attached to the skin or is it attached to deep structures? Is it within the peritoneal cavity or the abdominal wall? Tensing the abdominal muscles by raising the head and shoulders will allow you to distinguish.

6. **Skin overlying**: e.g. red and inflamed suggesting an inflammatory lesion.
7. **Tenderness**: the mass is either tender or not. Rebound tenderness is abdominal tenderness that is worse when the palpating fingers are quickly removed from the place of palpable tenderness and it indicates associated peritoneal irritation.
8. **Temperature**: feel with back of fingers on surface and surrounds.
9. **Transillumination**: (if applicable) whether a torch behind lump will allow light to shine through.
10. **Fluctuation**: demonstration of this sign indicates a fluid-filled cavity.

Detection of fluctuation is done by the following methods:

- a) Two hands, one presses the swelling and the other (the observing hand) detects fluctuation which is displacement of fluid from one part to the other. The observing hand must also fix the swelling in place to prevent it from slipping one way or the other. Fluctuation must be done in two directions at right angles to each other.
- b) Assess by placing 2 fingers in "peace sign" on either edge of lump, then tapping the lump center with index finger of the other hand: fluctuant lump will displace peace sign fingers.
- c) Paget's test (used for small swellings): In this case by one finger in the center of the swelling, pressure gives a yielding sensation.
Solid swellings have their center non yielding.



Peace sign



Paget's test

- d) Very large soft cystic masses can be assessed by a fluid thrill.

11. Irreducibility:

- **Compressible**: mass decreases with pressure & reappears immediately upon release.
- **Reducible**: This is a property of herniae. The lump may be gently compressed and reduced to the cavity in which it is normally contained. It will reappear by coughing or gravity (standing up).

12. Regional draining lymph nodes: if available for palpation should be examined for size, consistency, mobility, tenderness and matting. Para-aortic lymph nodes are exceptionally palpable in very thin emaciated patients

13. Edges (Borders): are either well defined or ill-defined. Well defined borders are usually presumptive of a benign nature of a swelling; while ill-defined borders are common with inflammatory and malignant swellings. Also, it can be sharp, rounded, etc.

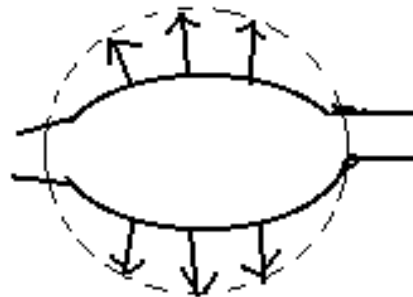
14. Consistency: A lump may vary from soft to bony hard.

- Soft mass: usually cyst or abscess
- Firm mass: usually inflammatory
- Hard mass: usually tumor

N.B. any swelling can be of uniform consistency all through or with variable consistency (variegated consistency).

15. Appearance of the patient

16. Mobility: (free or fixed to adjacent tissue). Move lump in two directions, right-angled to each other (side to side and above down movements). Retroperitoneal swellings and those attached to bone are usually immobile. Adhesions of the swelling to the surrounding organs or structures limits its mobility.



Expansile pulsation

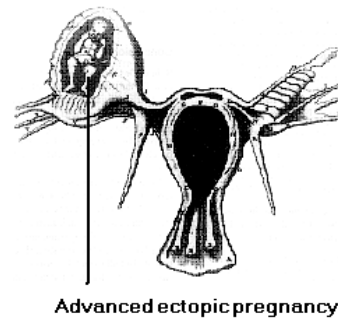
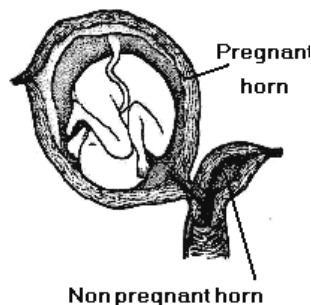
17. Pulsatility: means that the swelling is related to the arterial system (aneurysm). Pulsatility may be either expansile where the swelling actually increases (expands) in all directions during the heart beat or transmitted when the swelling lies superficial or deep to an artery.

Remember the complete description of swelling (lump or mass), by the following Mnemonic:

6 Soldiers + 3 Tailers FIRE CAMP

Occasionally during palpation, masses are felt beside the uterus and closely related to it. The most important of these are:

1. A full urinary bladder: in addition to the obstetrical significance of the underlying cause, the full bladder per se does simulate and may be mistaken for an ovarian cyst. Also it may mask the underlying structures, rendering palpation of the uterus quite difficult.
2. Fibromyomata: the importance of this tumour lies in the following facts:
 - It may completely mask the underlying pregnancy.
 - It is affected by pregnancy, labour and the puerperium.
 - It affects the course of pregnancy, labour and the puerperium.
3. Ovarian tumours: the obstetrical significance of these tumours lies in the following facts:
 - They mask the underlying pregnancy and/or may be mistaken for polyhydramnios, hydatidiform mole, uterine fibromyomata, full bladder or hydronephrosis.
 - They are affected by pregnancy, labour and the puerperium.
 - They affect the course of pregnancy, labour and the puerperium.
4. Advanced ectopic pregnancy and Pelvic haematocele.
5. Non-pregnant horn of a bicornuate uterus.

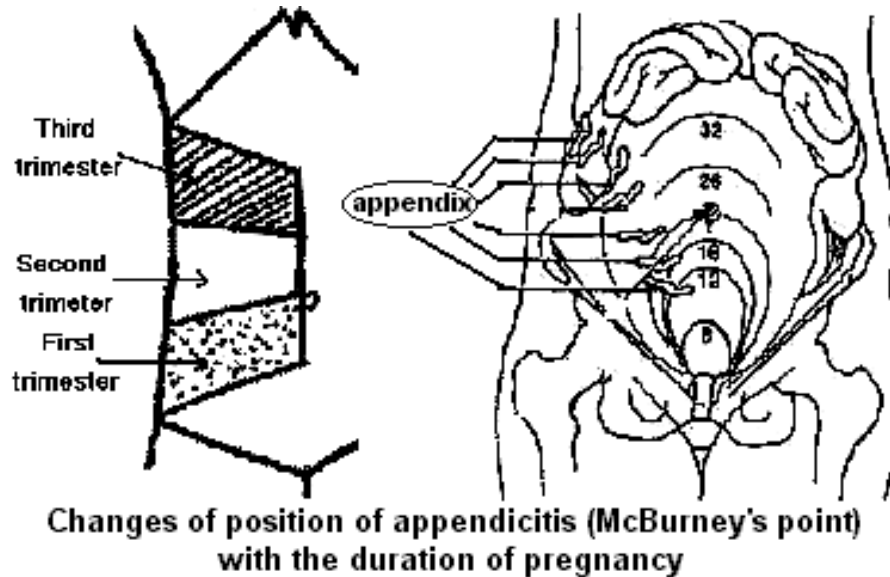


To detect masses arising from the pelvis like an enlarged bladder or an ovarian cyst, or fibromyomata, examine the abdomen as before but starting above the umbilicus and go down to the pubis.

Special tests:

Palpation of McBurney's point:

Palpation of McBurney's point and thorough examination of the patient for an acute or chronic appendicitis, must be performed in every patient complaining of lower abdominal pain or vomiting during pregnancy, a complaint very commonly encountered in normal pregnancy, and may be taken lightly by the patient and by the attendant, resulting in delay of the diagnosis and complications.

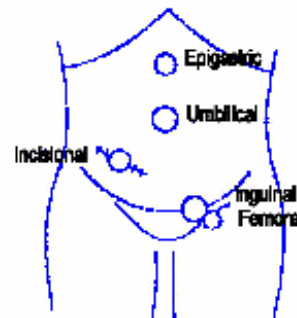


Another factor which cause delay of the diagnosis is the misdiagnosis of acute appendicitis due to the anatomical changes which take place in the disposition of the organs and of course the appendix as the uterus grows during pregnancy.

Palpation of sites of hernia:

Palpation of the abdomen must include palpation of the common sites of hernia. The common sites to be examined are:

1. The umbilicus and along the linea alba.
2. The inguinal canal.
3. The femoral canal.



**common sites
of hernia**

Murphy's sign:

- The examiner's fingers or thumb are hooked under the medial right costal margin in mid-clavicular line and the patient inhales
- A pause or a brief inspiratory arrest "catch" during inhalation is secondary to patient discomfort and is a sign of gallbladder irritation
- Eliciting Murphy's sign is the one instance in which the fingertips, rather than the pad of the hand is used for deep palpation.

Costovertebral angle tenderness:

- Performed by striking the costovertebral angle or palpating in the soft tissue below the junction of the posterior costal margin and spine in the seated patient

- Tenderness indicates inflammation or irritation of the kidney (as in pyelonephritis)



Striking the costovertebral angle

II- **Obstetric palpation:** includes

- 1) General palpation of the pregnant uterus
- 2) Specific obstetric palpation: used after 28 weeks

1) **General palpation of the pregnant uterus:**

During most of the period of pregnancy, *the uterus presents itself as an abdominal mass*, and as any mass, one must comment on its *site, size, contour, consistency, tenderness, mobility*. In addition, one must look for two specific characters which are the *uterine contractions and external ballottement*.

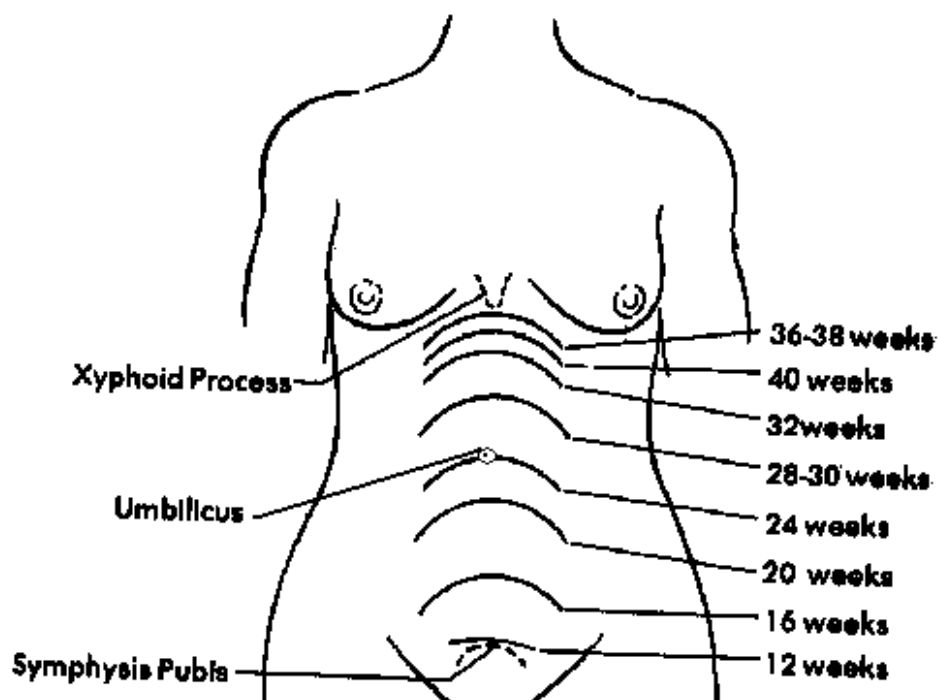
i. **Site of the uterus:**

Pregnant uterus is a central mass in the lower abdomen early in pregnancy and as it grows, it encroaches on the upper part of the abdomen, and in the majority of cases will show mild deviation and rotation to the right.

ii. **Size of the uterus:**

The duration of a pregnancy can be estimated during the physical examination based on the height of uterine fundus.

Technique: The woman should be recumbent. Both hands are cupped around the uterine fundus, with the palms in the midclavicular line and the fingers pointing medially.



Week of gestation	Fundus Height
16th week	1-2 fingers above the pubic symphysis or at the junction of the lower 1/3 with the upper 2/3 of the line joining the symphysis pubis to the umbilicus.
20th week	2-3 fingers below the umbilicus or at the junction of the lower 2/3 with the upper 1/3 of the line mentioned above.
24th week	at the level of the umbilicus
28th week	2-3 fingers above the umbilicus or at junction of the lower 1/3 with the upper 2/3 of the line Joining the umbilicus to the xiphisternum.
32th week	halfway between the umbilicus
36th week	up to the xiphisternum
40th week	1-2 fingers below the xiphisternum or comes down almost to or a little above its previous level at the 32 nd week.

A uterus larger than the expected calculated size may be due to mistaken dates, vesicular mole, polyhydramnios, multiple pregnancy, big sized fetus, fibromyomata with pregnancy,...etc. A uterus smaller than the expected calculated size may be due to mistaken dates, IUFD, IUGR, oligohydramnios,....etc

iii. Shape of the uterus:

By the sixteenth week it is pyriform, and this shape is preserved till term.

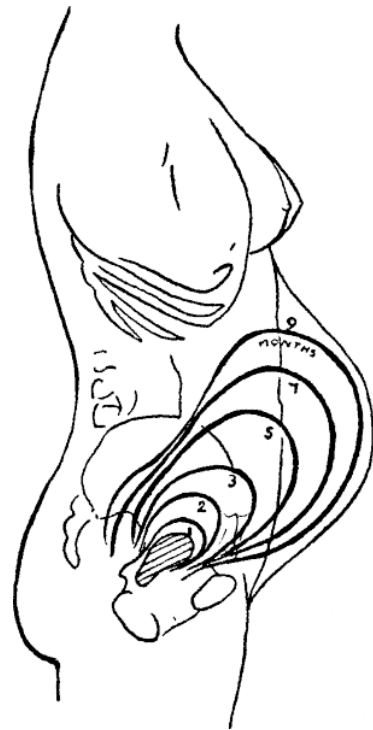
The shape of the uterus may be more or less spherical as in cases of polyhydramnios and vesicular mole (due to over distension of the uterus) or it may be irregular as in cases of abnormal presentations (e.g. shoulder presentation), uterine fibromyomata with pregnancy and congenital anomalies of the uterus.

iv. Consistency of the uterus:

In early pregnancy, the uterus is markedly softened. By the sixteenth week it becomes more or less elastic. Late in pregnancy, as the fetus fills the major part of the uterine cavity, the consistency will vary from one part to another.

Site & shape of uterus as pregnancy develops

Characteristic doughy consistency is found in cases of vesicular mole and in cases of intra-uterine fetal death, tense and cystic in polyhydramnios, very hard in concealed accidental hemorrhage and firm in oligohydramnios, general tonic contraction & fibromyomata of the pregnant uterus.



v. Tenderness on the uterus:

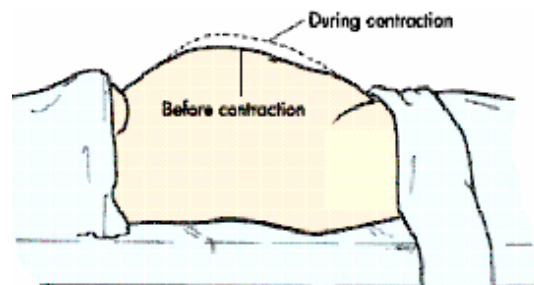
In normal pregnancy, slight tenderness may be encountered on one or both sides of the lower abdomen due to stretch in the round ligaments and near term over the site of fetal head. However, manifest tenderness on the uterus may be encountered in many cases of pathological pregnancy such as vesicular mole, accidental haemorrhage, polyhydramnios and degenerated fibromyomata.

vi. Mobility of the uterus:

The pregnant uterus can be moved from side to side, and to a less extent upwards and downwards.

vii. Uterine contractions:

During abdominal palpation, contractions of the uterus could be felt and is known as "Braxton Hick's " sign of pregnancy.

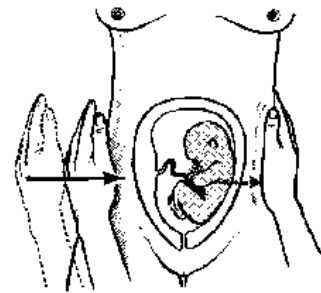


Contour of the abdomen before and after uterine contraction

viii. External ballottement:

This is one of the signs of pregnancy and can be detected from the 18th week onwards. It depends on the presence of a firm object (fetus), floating in a fluid medium (liquor). To elicit it, the patient lies on her side and two hands of the examiner are placed by the sides of the uterus. The lower hand is then dipped sharply upwards, when a firm object is felt to recede from this hand and impinges on the other.

External ballottement of great diagnostic help in cases of polyhydramnios and in cases of pregnancy associated with ovarian cyst. However, it is not characteristic of pregnancy as it is occasionally met with in cases of pedunculated subserous uterine fibromyomata or ovarian fibromata, accompanied with ascites.



External ballottement

2) Specific obstetric palpation:

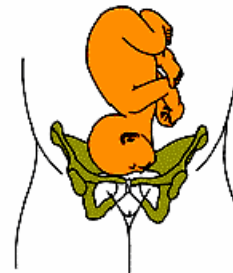
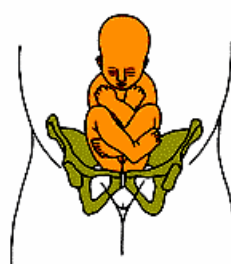
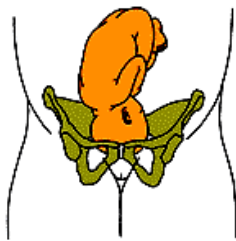
Aim: The aim of abdominal palpation near term is to:

I. Assess fundal height:

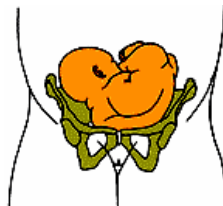
Fundal height (cm) approximates weeks of gestation

II. Assess fetal lie: i. e. the relation between the longitudinal axis of the fetus and that of the mother.

1. Longitudinal lie: (if both coincide)
2. Transverse lie: (if the fetus lies transversely)
3. Oblique lie: (if the fetus lies obliquely)



Longitudinal lie



Transverse lie



Oblique lie

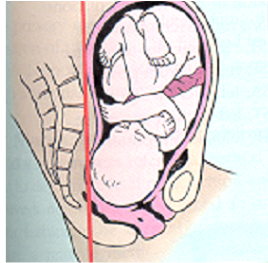
III. Assess the attitude of the fetus: i.e. the disposition of the fetus.

If the fetus is well flexed, the attitude is described as a flexed attitude.

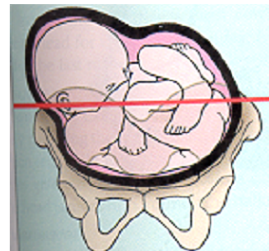
If the fetus is deflexed, it is a deflexion attitude (as in occipitoposterior)

If the fetus is partially extended, it is a brow presentation

If the fetus is completely extended, it is described as an extended attitude as in face presentation.



Fetal Attitude flexion, fetal lie longitudinal



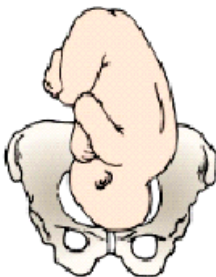
Fetal Attitude flexion, fetal lie transverse

Flexed attitude

IV. Assess fetal presentation:

i.e. that part of the fetus lying lowermost. Presentation of the fetus may also be defined as that part of the fetus which the examining fingers per vaginum encounter first.

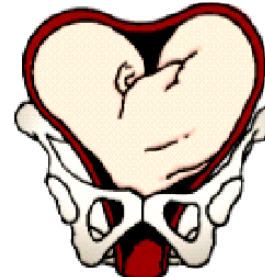
- If the head of the fetus lies lowermost, it is described as cephalic presentation.
- If the breech lies lowermost, it is breech (podalic) presentation.
- If the shoulder lies lowermost, it is a shoulder presentation



Cephalic presentation



breech presentation



Shoulder presentation

V. Assess fetal position: i. e. the relation of the back of the fetus to the right or to the left sides of the mother, and whether it is directed anteriorly or posteriorly. The position of the fetus may be also defined as the interrelation between the denominator and the four quadrants of the pelvis.

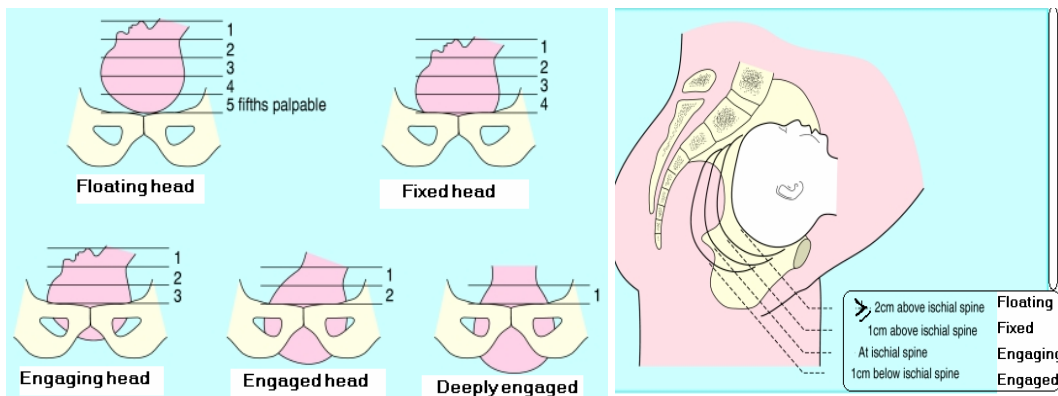
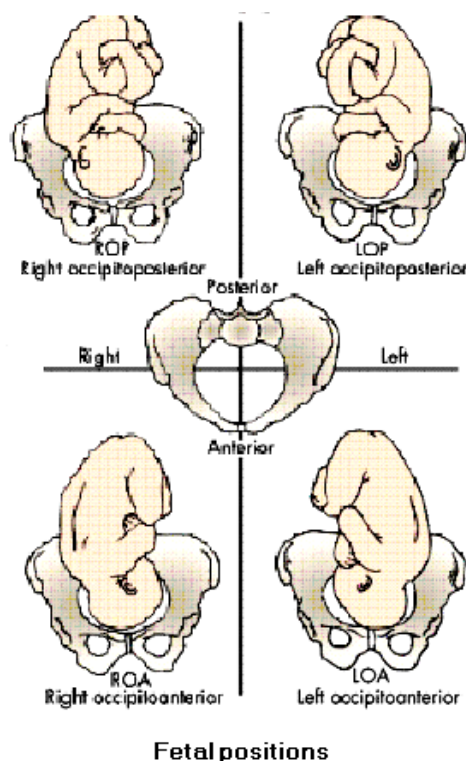
- If back is to the left and anterior it is described as the first position.
- If to the right and anterior it is described as the second position.
- If to the right and posterior it is the third position.
- If to the left and posterior it is the fourth position.

Other 4 subsidiary positions are:

- Left transverse
- Right transverse
- Direct anterior
- Direct posterior

VI. Assess fetal descent: whether the presenting part is floating, fixed, engaging or engaged.

- If the presenting part is above the pelvic inlet, it is described as floating.
- If it is fixed at the inlet, it is described as fixed.
- If it has partially passed through the inlet, it is described as engaging.
- If its largest diameter has passed through the inlet, it is described as engaged.



Fetal descent

VII. Assess multiple pregnancy: i. e., the presence of more than one fetus.

The different items described above are determined by the following specific palpatory procedures:

1. Assessment of fundal level.
2. Fundal grip.
3. Lateral grip.
4. First pelvic grip.
5. Second pelvic grip.
6. Combined grip.
7. Location of the anterior shoulder.
8. Palpation in multiple pregnancy.

Obstetric grips (Leopold's maneuvers)

Preparation of the patient:

- Instruct the patient to empty her bladder. This promotes comfort and allows for more productive palpation because fetal contour will not be obscured by a distended bladder.
- Position the woman supine with knees slightly flexed. Place a small pillow or rolled towel under one side. Flexing the knees relaxes the abdominal muscles. Using a pillow or towel tilts the uterus away from the vena cava, thus preventing supine hypotension syndrome.

Procedure:

1- Assessing fundal level:

Position of the patient: The patient lies on her back with the shoulders and head slightly raised on a pillow.

Position of the examiner: The examiner stands on the right side of the patient facing her head.

Technique: any exaggerated obliquity of the uterus is corrected with the right hand to bring the fundus to the midline. The ulnar border of the left hand is thrust under the xiphi-sternum and moved downwards, till the fundus of the uterus is felt under the palmar surface of the hand.

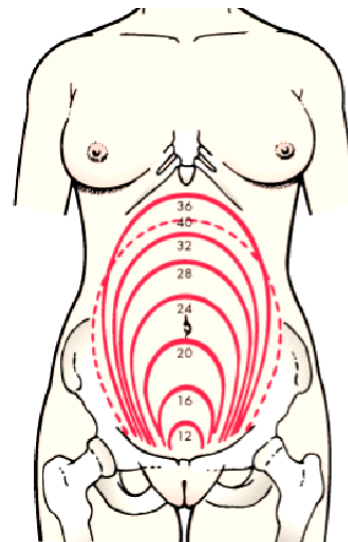


Assessment of fundal level

At this point, the highest level of the fundus in the middle line is marked.

❖ **Interpretation:** from the above point, the duration of pregnancy can be calculated by:

- a) Noticing its relation to the distance between the umbilicus and the xiphisternum (see illustration).
- b) Measuring its height above the symphysis pubis in centimeters.



Height of the fundus by weeks of normal pregnancy with a single fetus

❖ **Height of the fundus:**

Regarding the relation between the height of the fundus and the duration of pregnancy, it was noticed that the level of the fundus at the 32nd week and at the 40th week (full term) are almost the same. This descent of the level of the fundus at full term, is more manifest in the primigravida than in the multipara. To get the correct duration of pregnancy when the fundus is at this level, the following points are of help:

1. History:

- a) Date of last menstrual period.
- b) Date of quickening.
- c) History of lightening.

2. Examination:

- a) The uterus is broader and larger at full term with manifest shelving.
- b) The proportion of the size of the fetus to the amount of liquor is much greater at term.
- c) The size of the fetus is much larger at full term, compared to that at the 32nd week
- d) The fetal head is much larger and harder at term and may be engaged especially in the primigravida.
- e) Vaginal examination at term shows that the head is harder, the suture lines are close together and the cervix is ripe.

3. Ultrasonography

❖ **MacDonald formula:** another method by which the duration of the pregnancy can be calculated after the 24th week, is by the use of MacDonald formula. This states that the height of the uterus above the symphysis pubis in centimeters, divided by 3.5, gives the duration of pregnancy in lunar months. Thus, if the height of the uterus is 28 cms, the duration of pregnancy will be:

$$\frac{28}{3.5} = 8 \text{ lunar months.}$$

❖ **Symphysis fundus height:**

This is a rough estimate of the size of the [fetus](#) and is used to screen for problems with fetal growth (unusually small or unusually large).

Place the zero line of the tape measure on the anterior border of symphysis pubis (situated just below the pubic hair line in the middle) and stretch tape over midline of abdomen to top of fundus. The tape should be brought over the curve of the fundus.

The fundal height (in cm) increases as the uterus enlarges. Between 18 and 30 weeks of gestation the fundal height in centimeters is roughly the same as the number of weeks of gestation plus or minus 2. After 32 weeks the relationship is less accurate.



2- The fundal grip:

Measuring Symphysis fundus height

This maneuver aims to determine what part of the fetus is occupying the fundus. (whether fetal head or breech).



Technique of the fundal grip

Fundus occupied by breech

Fundus occupied by head

- a. Stand at the foot of the patient, facing her and place both hands flat on her abdomen. Gently palpate the superior surface of the fundus. If the fundus is markedly deviated to one side, it should be either brought to the midline, or the examiner's hands should go to where it lies. By gentle manipulations, the hands at the fundus should notice the exact characteristics and nature of that part of the fetus lying there (breech is encountered in 96% of cases and the head is met with there in 3. 5% of cases only).
- b- Determine the size , shape, consistency, tenderness and mobility.

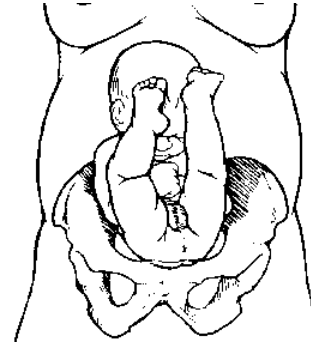
Characteristics	Breech	Head
Size	Bulkier	Smaller than complete breech
Contour	Irregular	Rounded, smooth and regular
Consistency	Irregular	Hard
Tenderness	Not tender	Slight tenderness
Ballotment	Does not ballots	Ballots
Continuity with the back	Passes smoothly into the back	Separated from the back by a <u>sulcus</u>
Small parts	Mobile, small parts beside breech	No small parts

❖ **Ballotment** is perhaps the most important sign, which helps to differentiate the breech from the head. Whenever the head is pushed sideways, it moves, while the trunk or the rest of the fetus remains stationary. This is described as ballottement of the head and is due to the presence of the atlanto-axial and the atlanto-occipital joints allowing free independent mobility of the head.

When it is attempted to ballot the breech, the body moves laterally with it as the lumbosacral joint connecting the breech to the rest of the trunk, lacks free movement,

❖ **In frank breech:**

The head lying at the fundus, may simulate the breech as feet and extended upper limbs will be felt in the fetal bulk at the fundus giving it an irregular contour, its size will be larger and its consistency will be variable. Ballottement of the head, will be absent as the extended legs splint the head preventing its free independent mobility.



Frank breech

Also, the frank breech lying in the lower pole of the uterus is small, smooth, quite firm and easily engaged; as the feet are not there. However, movement of breech will be transmitted to the back but not to the head

Thus *all the differentiating points between the breech and the head are difficult to elicit*, rendering the diagnosis very difficult.

3- The lateral (para-umbilical or umbilical) grip:

This maneuver is intended to locate the back of the fetus.

Position of the patient & the examiner: the same as that for the fundal grip.

There are 2 methods for performing the grip:

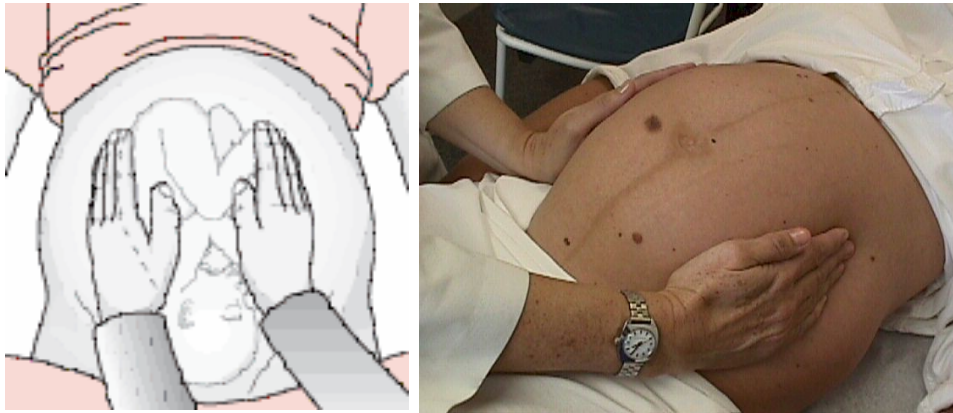
The first method: The palm of each hand is applied flat on either side of the abdomen at the level of the umbilicus.

The left hand is used to assist in steadying the uterus while the other palpates the fetus from above downwards, then alternatively, the right hand steadies the uterus and the other palpates the fetus from above downwards in 3 lines (paramedian, midclavicular and anterior axillary).



The paraumbilical grip (first method)

The second method: the two hands are placed flat, on either side of the midline at the level of the umbilicus, and the structures underlying each hand are palpated in succession. The two hands are then moved sideways to corresponding areas and palpation is performed again; and so on till both sides of the uterus are completely palpated.



The paraumbilical grip (second method)

The aim of the paraumbilical grip is to detect the side to which the back and limbs are directed. The back is recognized as a smooth, board like, uniform resistant continuous surface forming a gradual convex arch extending along the length of the uterus.

In the anterior positions of the fetus, the back is felt easily on one side with its anterior edge about one inch from the midline and the limbs are felt as small mobile knobs on the opposite side of the abdomen.

In the posterior positions of the fetus, the back is felt with great difficulty in the loin while the limbs are felt usually on both sides of the midline with its anterior edge about one inch from the middle line and the limbs are felt as small mobile knobs on the opposite side of the abdomen.

In case transverse lie, the paraumbilical grip will reveal the head of the fetus in one side of the abdomen, and the breech on the opposite side, usually with one pole (the cephalic) at a lower level

4- The first pelvic grip “Pawlick grip”:

The aim of first pelvic grip is to palpate that part of the fetus lying in the lower uterine segment or in the pelvic inlet i.e. the presenting part, and whether it is head, breech or shoulder.

Position of the patient examiner: is the same as for the other grips, but with the patient's flexed knees wide apart.

Technique:

The right hand of the examiner is placed flat between the abducted thighs of the patient, on the suprapubic region with the thumb on one side and the 4 fingers outstretched on the opposite side of the middle line. It is advisable to use the whole hand and to leave no space between it and the abdominal wall.

Gently grasp and try to press the thumb and fingers together aiming to detect the nature of the part occupying the lower part of the uterus.

N.B. In the majority of cases (96%), the head lies lower down and is easily differentiated from the breech by its characteristics (see before)

N.B. The left hand may be placed on the fundus to steady the uterus and apply slight counter pressure. By this left hand, one can determine whether the movements applied to the lower pole of the fetus by the right hand are transmitted to the trunk or not (ballottement).



The first pelvic grip (Pawlick grip)



1st pelvic grip with left hand placed on fundus

N.B. In cases of cephalic presentation with the head engaged in the pelvis, the Pawlick grip will be above the level of the head, yet it is still of value to differentiate between anterior and posterior positions of the vertex. In the anterior position, the anterior shoulder will be caught in the grip as it is about one inch from the middle line, while in posterior positions it is out of reach being about 3 inches from the middle line, and so in these cases the thumb will meet the other fingers.

N.B. In cases of occipito-posterior positions, the small anterior sincipital end of the head may recede from the grasp of the hand, simulating a breech with extended legs. On the other hand, cases of breech with extended legs, occasionally simulate the occipito-posterior positions of the head in the Pawlick grip, so combined pelvic grip or ultrasound may be resorted to for the correct diagnosis of such cases.

5- The second pelvic grip:

The aim of second pelvic grip is to:

1. Determine the presentation of the fetus
2. Determine the attitude of the head in cases of head presentation
3. Determine engagement of the head of the fetus

Position of the patient: This is the same as for the other obstetric grips.

Position of the examiner: The examiner stands on the right side of the patient facing her feet.

Technique:

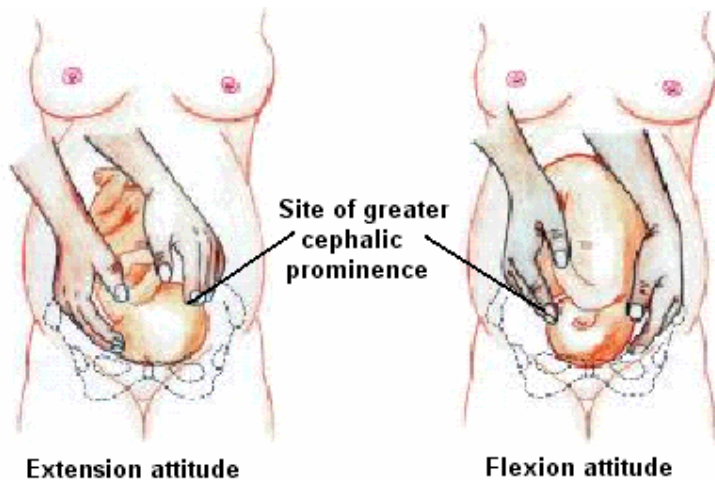
- a) Place your hands on either side of the lower abdomen, fingertips pointing downward just above the pubic bone. Press inward gently but firmly. Now alternate pressure with your hands against the mass in the pelvis to (ballot) it back and forth. Attempt to outline what is in the pelvis by moving your hands around its borders.



Second pelvic grip

(see characteristics of the head and breech). If neither the head nor the breech is found in the lower portion of the uterus, the fetus may be lying either transverse or oblique.

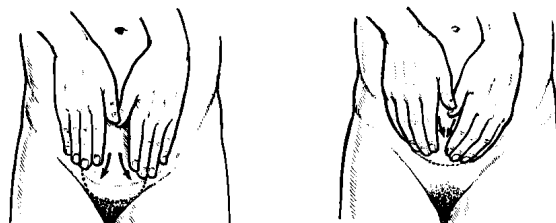
- b) Starting with the hands in the same position as described above but at a higher level, slide your hands downwards, exerting a little pressure inwards and backwards. As your hands go downwards, if the advancing finger tips of one hand is arrested



before the other. The site at which the higher arrest occurs, is the site of the greater cephalic prominence. If this is towards the back of the fetus, then the head is extended (face presentation). If it is towards the front of the fetus, the head is flexed

(occipitoanterior). If the head is midway between extension and flexion as in brow presentation the cephalic prominences will be on equal levels on both sides.

- c) If the head is not engaged, the fingers of both hands will be convergent while if head is engaged they are divergent



Divergent(engaged head)

Convergent (not engaged)

Differences between the occipital and sincipital ends of the head:

Occipital end	Sincipital end
Bulky	Smaller
Smooth, rounded and regular	Irregular, with a “hoof” shaped bony prominence of the chin felt in some cases
Passes gently into the trunk, except in cases of face where a depression is found between it and the back	Separated from the trunk by a depression
On the same side as the back of the fetus	On the side of the ventral aspect of the fetus

N.B. Another methods to estimate the level of the head:

Estimating the level of the head can be very difficult at times. Use of the role of fifths (Crichton's technique) could help in your assessment:

The two handed approach: Facing the mother's feet, start palpating at the level of the umbilicus and move downwards. Try to identify the occiput (the side the back is on) and the sinciput. Determine how many fifths of the head are above the brim.

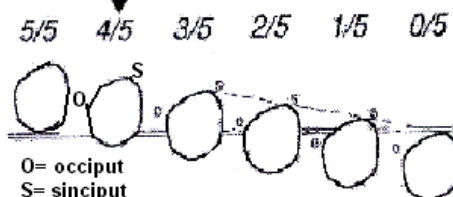
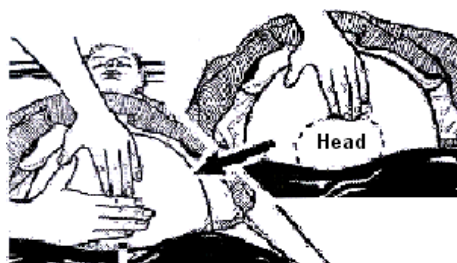
5/5: the head is completely palpable above the brim and is mobile.

4/5: the head begins to enter the pelvis. When you palpate, your fingers converge as you can get beneath the head.

3/5: the sinciput is still high but the occiput can just be felt. It is more difficult to get beneath the head.

2/5: the sinciput can be felt and you may feel a little of the occiput. Your fingers tend to diverge as you reach the pelvis as you can no longer get beneath the head.

Measuring fifths (One hand method)



1/5: Only the sinciput can be felt.

0/5: no head is palpable.

The one handed approach: This method can be used to confirm your finding with the two handed approach. With one hand, locate the upper border of the head in the midline. Then feel how many fingerbreadths fit between this point and the upper border of the symphysis. Each fingerbreadth corresponds with one fifth. This technique is often easier than the two handed approach.

6- The combined grip:

The combined grip is *not used as a routine*, but it is valuable in cases of doubtful presentation, as the simultaneous comparison of the two poles of the fetus helps to clue the diagnosis. It is particularly useful in the following conditions:

1. Cases of breech with extended legs.
2. Cases of occipito-posterior position
3. Some cases of complete breech.

Position of the patient: same as that for the Pawlick grip.

Position of the examiner: The examiner stands on the right side of the patient, facing her left ear.

Technique:

Grasp the portion of the lower abdomen directly over the largest diameter of the fetal pole in the lower uterus. Gently but firmly press into the abdomen in order to feel the presenting part beneath your hand, between your thumb and fingers. Keeping your entire hand rigid in the C shape, move your hand back and forth in order to ballot the fetal pole between your fingers.



The combined grip

Form the other hand into a C shape and, in the same fashion, simultaneously use it to palpate the pole in the fundus. Using both hands together can help you differentiate the head from the breech by comparing the characters of that part of the fetus lying within the grasp of one hand to the characters of that part lying within the grasp of the other hand.

7- Location of the anterior shoulder:

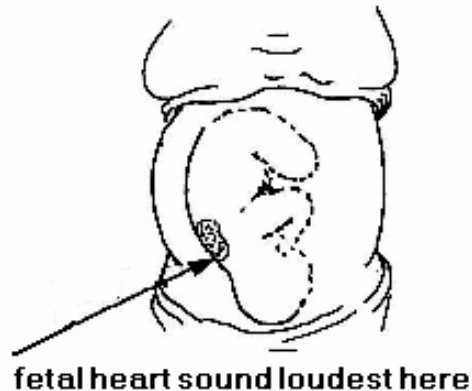
Technique:

After palpating the back, the examiner traces its resistance downwards till it disappears in the groove of the neck, between the back and the head where the examiner bends his fingers in the groove of the neck and palpate upwards and inwards till the top of the shoulder is hooked. The height of the anterior shoulder above the symphysis pubis, as well as its distance from the midline of the body, should be noted.

Clinical significance:

The position of the anterior shoulder help in the diagnosis of the following conditions:

1. Determination of the position of the fetus. Thus, in anterior positions, the anterior shoulder is found at/or across the middle line, while in posterior positions it is usually felt with difficulty about 7-8 cm. away from the middle line and at a higher level.
2. Auscultation of the fetal heart over it is the best site for hearing the fetal heart sounds.
3. It is a useful landmark to judge the degree of the descent of the head during labour.



8- Palpation in multiple pregnancy:

In cases of multiple pregnancy, the different palpatory procedures usually reveal the nature of the condition. Thus:

1. The level of the fundus is higher than expected
2. The different obstetric grips show the presence of too many small fetal parts .The most characteristic diagnostic finding is the presence of more than one fetal head. Owing to the fact that abnormal presentations in multiple pregnancy are quiet frequent, the findings in the different obstetric grips are quite variable, depending on the different parts of the fetuses encountered.
3. The consistency of the uterus may be very tense.

Summary of obstetric palpation

Student action	Rational
<u>Assessment of Fundal level:</u>	• To compare size of uterus with period of amenorrhea.
<u>Fundal grip:</u> Face the woman's head. place palms of both hands downwards with fingers close together on the fundus, gently feel with the finger tips.	• To determine what part of the fetus is in the fundus of the uterus. • Helps to identify the lie & presentation. • Usually the buttocks are in the fundus. They feel firm but irregular. • The head feels firm, round & Smooth.
<u>Paraumbilical grip:</u> - Place one hand on each side of abdomen. - Use one hand to steady the uterus & the other to palpate, Alternate hands and walk the finger tips of both hands over the abdomen to feel the back.	• To locate the fetal back & determine the position. • The side occupies the back is felt smooth & Firm. • The side opposite to the back will feel irregular. Limb parts and movements may be felt.
<u>First pelvic grips: "Pawlik's grip"</u> Grasp the lower part of the uterus between index and thumb, spread wide enough to fit the head, don't put much pressure.	• To determine what part of the fetus is in the lower segment of the uterus. • Sometimes useful to judge the size and mobility of the head. • If ballotement is felt then head isn't yet engaged. • If ballotement don't occur, this means that the presenting part is engaged in the true pelvis.
<u>Second pelvic grip :</u> 1 - Turn to face the woman's feet. 2 - Ask the woman to bend her knees slightly and breathe steadily with her mouth open. 3 - Hold the sides of the uterus just below the umbilicus with fingers close together, pointing downwards & inwards.	• To determine the presentation and engagement of the presenting part into the pelvis. • To aid relaxation and avoid causing discomfort to woman. • If the fetal head is presenting a smooth hard rounded mass is felt on both sides. • If buttocks are in the lower part of the uterus the presentation is breech.

Abdominal percussion:

Percussion of the abdomen can check for the presence of abdominal distention, tumor, fluid, enlargement of viscera.

Percussion may also help in obstetric diagnosis.

When percussion is practiced, always proceed from a tympanitic or resonant site towards a dull or flat site and position the middle finger that receives the strike parallel to the anticipated border and not perpendicular to it.



Percussion of the abdomen

1- General:

Percuss lightly from above downwards to detect level of the fundus uteri of the pregnant uterus and also in all four quadrants and over any suspicious areas of abdominal asymmetry or swelling (that you noticed on inspection). The normal pattern is of more tympany than dullness.

- There will be a normal transition in the flanks from tympany anteriorly to dullness posteriorly.
- If the abdomen is distended and diffusely tympanic then it suggests intestinal obstruction with diffuse gaseous dilation of bowel.
- If the abdomen is distended and dull over the most protuberant part and tympanic in the flanks away from the dullness it suggests an underlying solid mass such as a tumor or enlarged liver or spleen.
- If the abdomen is distended, tympanic in the central portion and dull in the flanks it suggests ascites and further maneuvers should be done to help answer this question.
- Percussion in cases of pseudocystitis helps to clarify the diagnosis by detection of non enlarged uterus.

2- Determination of the liver dullness:



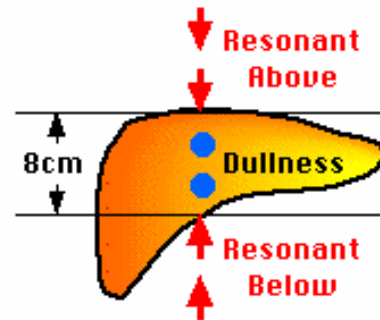
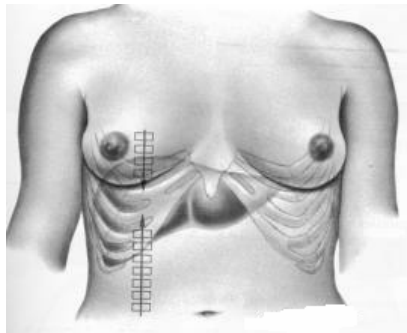
Percussion of liver- upper margin



Percussion of liver- lower margin

The liver is, not uncommonly, affected by pathological pregnancy or diseases associated with pregnancy. Hence, percussion may be performed to detect whether the liver is normal, ptosed, enlarged or small (liver atrophy).

To delineate the liver borders, you should start percussing along the midclavicular line at the 4th intercostal space. The percussion note will change from resonant to dull at the 5th intercostal space where the upper border of the liver normally lies. This dullness will continue down to or to just below the costal margin in a normal subject.



Percussion for liver span

Measure the liver span between these two points. This measurement should be 6-12 cm in a normal adult.

Enlargement of liver dullness occur in hepatitis, hepatic carcinoma, etc.

Decreased liver dullness e.g. cirrhosis of liver

3- Determination of splenic dullness:

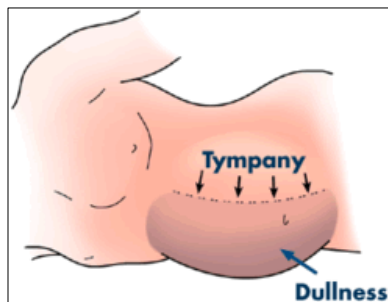
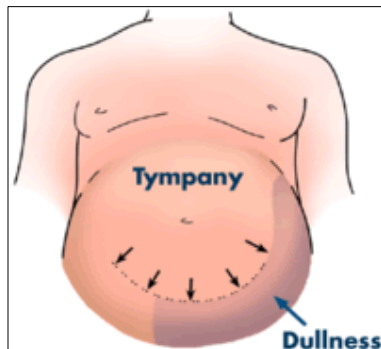
- Percuss the lowest costal interspace in the left anterior axillary line. This area is normally tympanitic.
- Ask the patient to take a deep breath and percuss this area again. Dullness in this area is a sign of splenic enlargement

4- Detection of free fluid in the peritoneal cavity:

Free fluid in the peritoneal cavity is detected by the shifting dullness test.

1. The patient is examined in the supine position.
2. Direct percussion is done over the abdomen, from the umbilicus to the flanks.
3. The location of the transition from tympany to dullness is noted. In presence of free fluid or ascites, percussion note is tympanitic over the umbilicus and dull over the lateral abdomen and flank areas (the tympany over the umbilicus occurs in ascites because bowel floats to the top of the abdominal fluid)
4. The patient is then rolled on her side and allow time for the fluid to gravitate before delineating fluid level again by percussion from the umbilicus to flank area. (Fluid would gravitate to the dependent flank, which would sound flat to percussion while the nondependent flank would be tympanitic)

5. Then repeat on the other side
6. Positive test: when free fluid is present, the area of dullness will shift to the dependent site. The area of tympany will shift toward the top.



Shifting dullness test

If the amount of free fluid is small, abdominal percussion with the patient in the knee-elbow position may be of help. This latter position is of very limited value in the second half of pregnancy due to the presence of the uterus.

Demonstration of fluid thrill: fluid thrill is demonstrable only if a large volume of ascetic fluid is present. With the patient in supine position, the examiner's left hand is placed on the patient's right flank, an assistant (or the patient herself) places one hand on the middle of the abdomen to prevent the transmission of any wave through the tissues of the abdominal wall. The examiner's right hand then lightly taps the left flank of the patient, in the presence of a significant amount of ascites, a wave will be transmitted through the fluid to the examiner's left hand as a sharp impulse.



Demonstration of fluid thrill



Knee elbow position

Abdominal auscultation:

Auscultation of the abdomen during pregnancy is performed to detect:

A) Fetal heart sounds

B) Other sounds related topregnancy

- 1- Uterine soufflé.
- 2- Funic soufflé.
- 3- Fetal movements.
- 4- Vagitus uterinus.

C) Associated sounds not related topregnancy

- 1- Transmitted maternal pulsations.
- 2- Fibrillary twitches in the abdominal wall.
- 3- Peristaltic movements.

A) Fetal heart sounds:

One may try to hear the fetus's heartbeat with a regular stethoscope or even by placing the ear directly on the pregnant abdomen. However, this is sometimes effective, but not always easy to hear.

There are two equipment which are commonly used to listen to the fetal heart beat. These are Pinard's stethoscope and the Doppler machine.

Pinard's stethoscope:

In the past, most obstetricians used a Pinard's stethoscope to listen to the fetus's heart beat. Pinard's stethoscope was named after a Dr. Pinard, a Frenchman who produced it in the mid 19th century. Pinard's stethoscope is a cone-shaped device made of plastic, metal or wood.



Technique of auscultation:

- The wide end of the stethoscope is placed on the woman's abdomen perpendicular to the area where auscultation is being done (where the fetus's shoulder is situated)
- Apply your ear to the flat end; you will need to apply gentle pressure by your head or use one hand to fix the stethoscope .
- Take your hand away from the Pinard's, listen and keep listening. You will listen for a sound that is in the distance and sounds like a watch ticking under a pillow, but of course faster than a ticking watch (tic-tac rhythmic soft sound simulating a watch).
- The aim is to hear the fetal heart through the fetal back. Thus, the bell end of the instrument is positioned over the place on the maternal abdomen under which it is felt that



**Auscultation of FHS
by Pinard stethoscope**

the fetus's back lies, remember the lungs are not inflated and the fetal heart can be heard clearly through the back.

- Whenever one side of the uterus is auscultated, counter-pressure must be applied to the opposite side.
- The accurate application of the stethoscope is essential to avoid external adventitious sounds near-by that mask the fetal heart sounds.

A Pinard's stethoscope can only be used after about 20 to 24 weeks of the pregnancy, when the fetus is large enough to be able to hear their heart beat clearly in this way.

Doppler machine:

In more recent years many obstetricians used the hand-held portable Dopplers. These machines emit high frequency sound waves called 'ultrasound' (about 2 MHz) to detect the fetus's heart beat and give a visual readout of the fetus's approximate heart rate as well as an audible sound. It is possible for a Doppler to detect the fetus's heart beat from about 12 to 14 weeks of the pregnancy, but it will definitely be detectable from about 16 to 18 weeks of the pregnancy.



Doppler machine

Technique of auscultation:

- The head of the Doppler machine is placed in the woman's abdomen using conducting gel.
- Switch the machine on and try to angle the machine in the best possible way to detect the fetus's heart beat. This can require a little bit of pressure.
- Try and be patient, as it may take a minute or so to find the fetus's heart beat.



Auscultation of FHS by Doppler

- If using a Doppler from 12 to 20 weeks of pregnancy, the fetus's heart rate may be located anywhere on the uterus. However, after about 20 weeks, the fetus's heart beat will sound loudest if the Doppler is positioned where the shoulder is located.

To measure the fetal heart rate, the obstetrician will count the heartbeats for a full minute, or count for 15 seconds and then multiply by four. Some of the instruments eliminate the need for this by providing a readout of the rate.

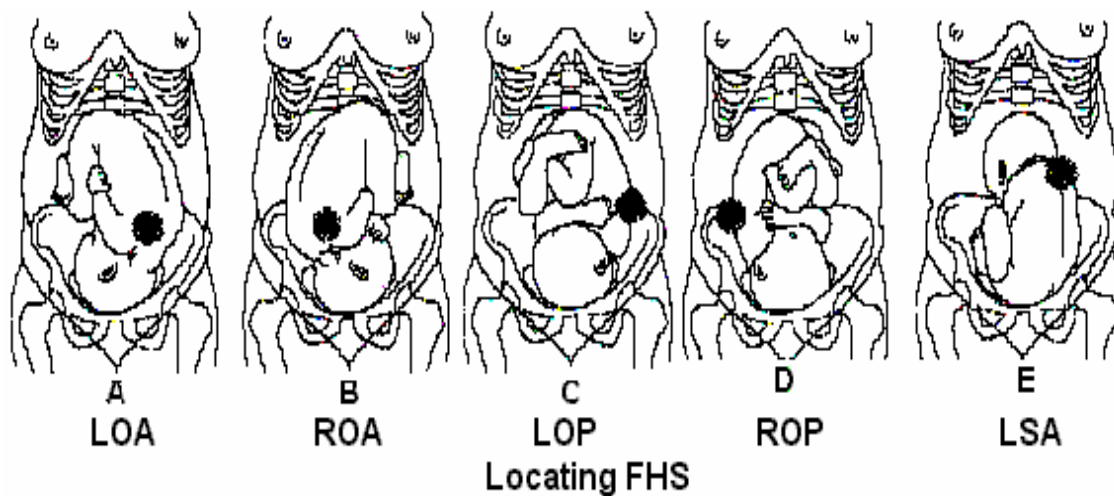
FHS auscultation help in the following conditions:

1- Diagnosis of pregnancy:

Auscultation of the fetal heart sounds provides one of the sure signs of pregnancy and life of the fetus.

2- Determination of the position of the fetus:

Hearing the fetal heart sounds provides confirmatory information about fetal position as the area of maximum intensity of the fetal heart sounds varies with the changes in the presentation and the position of the fetus. Conversely, recognizing the fetal position aids in locating fetal heart sounds.

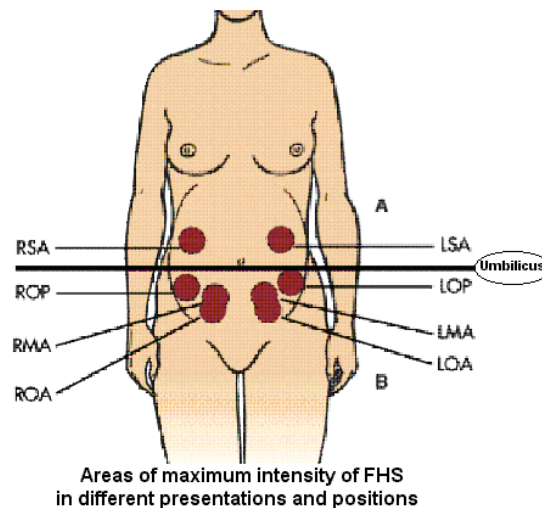


• **In vertex presentations:**

- **In Occipitoanterior positions**, the FHS are best heard mid way along the line joining the umbilicus to the corresponding anterior superior iliac spine. If the head is engaged move it down a bit.

- **In Occipitoposterior positions**, they are best heard in the flank in level with the umbilicus.

In some cases of occipito posterior positions of the vertex, the FHS may be heard over the front of the chest of the fetus rather than on its back. This is due to the deflexed attitude of the fetus commonly encountered in these cases. Consequently, in such cases the fetal heart sounds are heard on the opposite side of the back of the fetus, i.e., somewhere near the middle line of the abdomen and nearer to the umbilicus than the pubis.



- **In breech presentations:** the FHS are heard best above the level of the umbilicus on the side of the back. In breech with extended legs, they are heard below the level of the umbilicus at the same points as those of the corresponding vertex presentations.
- **In face presentations:**
 - **In mentoposterior positions,** the front of the chest of the fetus is directed backwards, hence the FHS may be difficult to hear, or heard indistinctly somewhere on either side of the umbilicus or below it.
 - **In mentoposterior positions,** the FHS are best heard a little above the midpoint of the line joining the umbilicus to the corresponding anterior superior iliac spine.
- **In transverse or shoulder presentations:** the FHS usually heard best on the side of the head at the level of the umbilicus

3- **Determination of intrauterine fetal death:**

Before the diagnosis of IUFD, on account of absence of the fetal heart sounds, the following requisites should be fulfilled:

1. The FHS ought to be heard before.
2. The position and the presentation must not be one of those in which the FHS are difficult to hear.
3. The FHS must be inaudible at repeated examinations, with an interval in between them.
4. There must be accompanying signs and symptoms suggestive of IUFD
5. Examination must not be hurried .
6. There must be no tumours of the uterus masking the FHS.
7. There must be no excessive amount of liquor amnii
8. There must be no other sounds that mask the FHS

However, ultrasound can be used to confirm presence or absence of fetal heart beats.

4- **Determination of possible fetal distress during labour:**

While observing the fetal heart sounds, the examiner should carefully notice the rate of the FHS per minute and can interpret the finding:

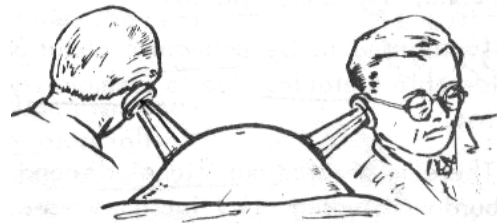
	Parameters	Interpretation
▪ Baseline Heart Rate	120-160 bpm	Normal
▪ Tachycardia Moderate Marked	161-180 bpm >180 bpm	Non reassuring Abnormal
▪ Bradycardia Moderate Marked	100-119 bpm <100 bpm	Non reassuring Abnormal
▪ Accelerations	>15 bpm for >15 sec	Stimulation Maternal fever
▪ Decelerations Early Late Variable	10-40 bpm 5-60 bpm 10-60 bpm	Head compression Hypoxia/acidosis Cord Compression Non Reassuring

5- Diagnosis of multiple pregnancy:

To be significant for diagnosis of twins, FHS should have the following conditions fulfilled:

- a) Fetal heart sounds must be heard quite distinctly in two areas far apart, with inability to hear them with the same intensity along the line joining these two areas.
- b) There must be a difference in the rates of the two hearts of at least ten beats per minute, provided that the count is done simultaneously at the two points by two competent examiners.

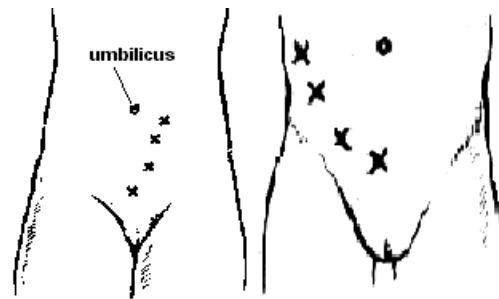
N.B. Occasionally the superimposition of the two sounds, gives a galloping sound (Arnoux Sign).



Simultaneous auscultation of FHS by 2 examiners

6- Determination of the progress of labour:

The area of maximum intensity of the FHS, gradually becomes lower and lower with the descent of the fetus during labour. Thus by marking this area on the skin, one can judge the extent of the descent of the fetus.



O.A position O.P. position
Change of area of maximum intensity of the FHS (X)

B) Other sounds related to pregnancy:

1- Uterine souffle:

This is a soft, hissing sound which is synchronous with the maternal pulse. It is produced by the flow of blood in the markedly enlarged uterine arteries. It is heard best on the lateral border of the uterus in the suprapubic region. Sometimes it is quite loud masking the fetal heart sounds. It is first heard round about the 24th week of pregnancy. Occasionally, however, it is heard in cases in which the uterus is hypertrophied e.g. some cases of fibromyomata. It is differentiated from the fetal heart sounds by its character, its site, and by being synchronous with the maternal pulse.

2- Funic souffle:

This is a soft, hissing sound which is synchronous with the FHS. It is produced by the flow of blood in the umbilical vessels. It is only heard when a loop of the cord is caught either between the stethoscope and a hard part of the fetus or between the trunk of the fetus and a limb. Though it is considered as one of the sure signs of pregnancy, yet it is of no practical value as it is detected in only about 1% of all pregnant women. It is differentiated from the fetal heart sounds by its character and by its disappearance when the fetus is manipulated.

3- Fetal movement:

Are sometimes heard during auscultation, They give a characteristic sharp sound.

4- Vagitus uterinus:

Is an intra-uterine fetal cry which is very rarely heard in those cases where air is introduced in the amniotic cavity, as in cases of PROM when the asphyxiated fetus in utero inspire air and produce the intrauterine cry.

C) Associated sounds not related to pregnancy:

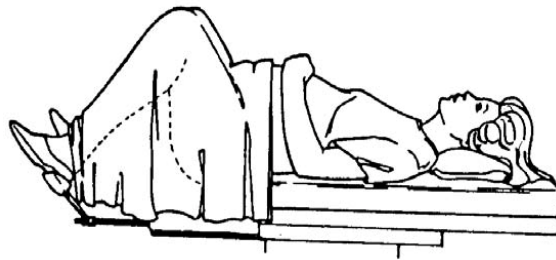
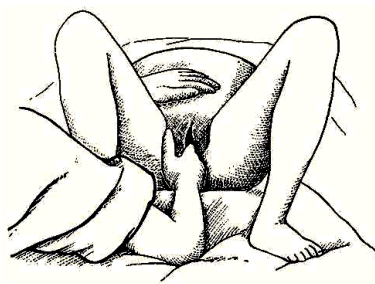
- 1- Transmitted maternal pulsations:** from the aorta to the pregnant uterus are sometimes heard when the abdomen is auscultated. These transmitted pulsations are to be differentiated from the FHS by being synchronous with the pulse of the mother.
- 2- Fibrillary twitches:** in the muscles of the abdominal wall sometimes heard in nervous patients, in cases of pseudocyesis and simulate the FHS. They are differentiated from the FHS by being transient, and heard only for a few seconds.
- 3- Peristaltic movements:** are sometimes heard and may mask the underlying FHS.

IV- Vaginal examination

I) Vaginal examination during pregnancy:

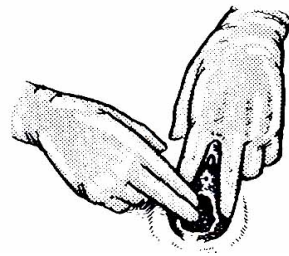
Vaginal examination causes some pain and is accompanied with certain risks during pregnancy; therefore it must be carried out with great gentleness. It must be remembered that a rough vaginal examination interferes with the young growing ovum in the uterus, leads to rupture of an ectopic pregnancy and predisposes to infection.

Technique of the vaginal examination:



Patient in the lithotomy position, draped for pelvic exam.

- The woman partially undressing from the waist down
- The patient assume the dorsal position with slightly elevated shoulders with semiflexed hips and knees and abducted thighs.
- The obstetrician usually puts a small amount of white antiseptic cream on their gloved fingers and places the index and middle fingers inside the woman's vagina until he feels her cervix.
- If the obstetrician wants to feel the uterus (when less than 12 weeks pregnant), he will use the other hand on the woman's lower abdomen, to try and feel the f the uterus.
- The passage of vaginal speculum to inspect the walls of the vagina and the cervix is essential especially in patients complaining of leucorrhea or bleeding during pregnancy. In the latter cases, the speculum sometimes affords the only method to assure whether the bleeding is an incidental one (surface bleeding) or an actual bleeding from the uterus.



A) Vaginal examination in early pregnancy:

Indications of vaginal examination in early pregnancy:

- 1- Diagnosis of pregnancy
- 2- Performing a pap test
- 3- Checking signs of an infection: The hormones of pregnancy affect a woman's entire body, including the environment of her vagina. Part of this can be to slightly alter the vagina's acidity (or pH), making the woman more prone to annoying fungal infections. The obstetrician will need to look at the genitals and probably do a vaginal examination with a speculum to help make a diagnosis. If required, they will also take swab tests to send to the pathologist for testing.
- 4- Looking for a cause of bleeding in early pregnancy: try to find out the cause of the bleeding. Sometimes a vaginal bleed can be the result of a polyp which can be seen if the obstetrician uses a speculum .

i. Vaginal examination in the diagnosis of pregnancy:

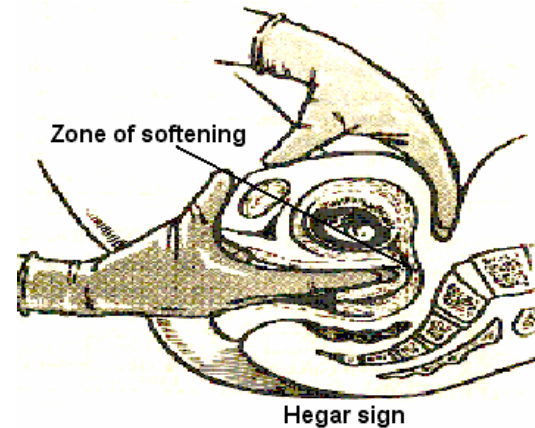
Unless there are health concerns or complications, there is no medical reason to have routine vaginal examinations in early pregnancy.

In the past, before the widespread use of instant pregnancy tests and ultrasounds, obstetricians used to perform a routine vaginal examination to help determine if a woman was possibly pregnant. They felt or looked for physical signs that sometimes accompanied pregnancy. However, *these signs were very vague and inconclusive* and are no longer used or relied upon and *of course, modern diagnostic techniques make a lot of signs obsolete and of historical interest only*. However, if there is a need for vaginal examination for another reason during early pregnancy, the obstetrician may comment on noticing them. The physical signs were often given names after the people that discovered them and include:

- **Kluge's sign:** describes the appearance of few varicose veins in the vulva during pregnancy. It appears as early as the 6th to the 8th week.
- **Chadwick's sign:** increased circulation to the vagina and cervix early in pregnancy changes the color from normal light pink to a purple/blue which is known as the "Chadwick's sign" and can be noticed from about the 8th week of pregnancy
- **Osiander's sign:** usually from about the 8th week of pregnancy, the obstetrician may be able to feel the extra blood flow pulsing through the woman's uterus by placing the fingers inside her vagina, on either side of the cervix.

- **Softening of the cervix:** often from about 10 weeks of pregnancy, the cervix feels softer, more like touching the lips rather than touching the tip of the nose.

- **Hegar's sign:** this can be detected between 6 and 12 weeks of the pregnancy. It depends on the anatomical changes taking place in the uterus at that period caused by compressibility and softening of the cervical isthmus (the portion of the cervix between the uterus and the vaginal portion of the cervix). It is due to the fact that the fetus does not fill the uterine cavity at this stage, leaving an empty space in the lower part.

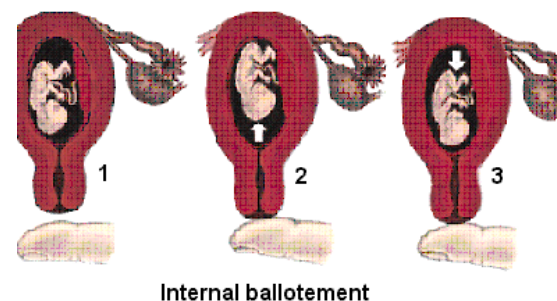


Thus, when the uterus is palpated

bimanually at that time, the examiner gets an impression of the emptiness or discontinuity between the upper part of the uterus occupied by the ovum above, and the bulk of the cervix below. Later on, as the ovum fills the whole uterine cavity, the sign will no longer be detected

- **Palmer's sign:** depends on the detection of rhythmic uterine contractions in the pregnant uterus. To elicit it, gentle bimanual vaginal examination is performed, which should extend for some minutes to notice the difference in the consistency of the uterus as it changes from contraction to relaxation. It is specially valuable in the diagnosis of pregnancy between the first and second missed periods.
- **Piscacek's sign:** depends on the undue lateral mobility of the body of uterus in early pregnancy. This mobility sometimes allows the body of the uterus to be deviated to one side or the other simulating a small ovarian cyst.
- **Internal ballottement:** This is one of the signs of pregnancy. It is encountered round about the 16th week.

When the lower uterine segment (or cervix) is tapped by examiner's finger, the fetus floats upward, then sinks again and can be felt on the finger. (not considered diagnostic as it can also be elicited in the presence ovarian cysts or pedunculated uterine fibromyoma with accompanying ascites)

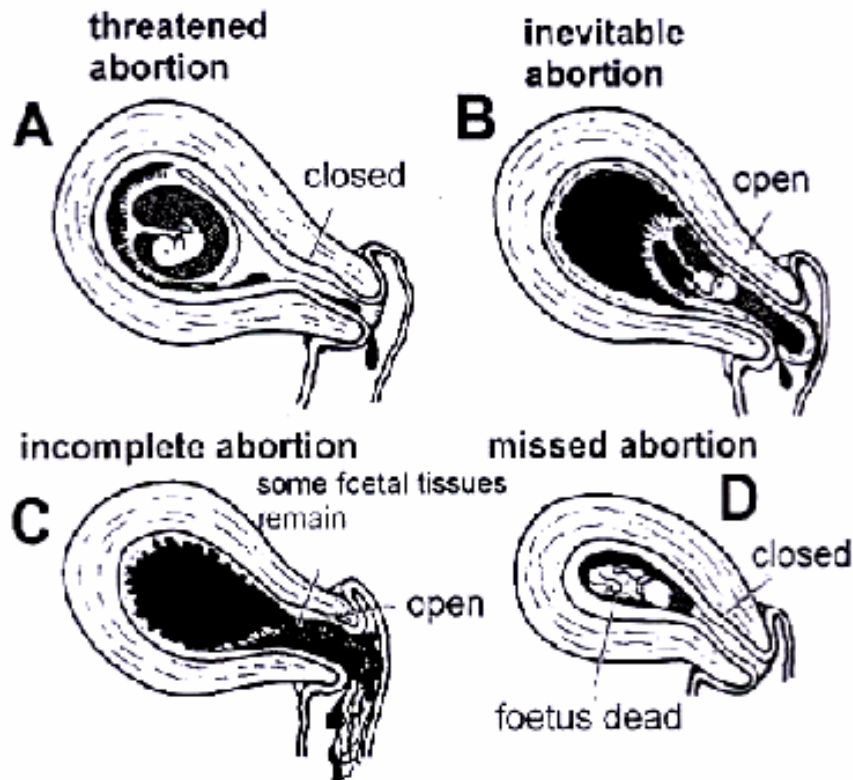


ii. Vaginal examination in pathological pregnancy:

The main pathological lesions encountered during the vaginal examination in early pregnancy are abortion, vesicular mole, ectopic pregnancy, retroverted gravid uterus and associated lesions in the genital tract.

The signs encountered during the vaginal examination in bleeding in early pregnancy (abortion, molar pregnancy and ectopic pregnancy) and incarcerated retroverted gravid uterus are summarized in the following tables:

Diagnosis	Bleeding	Cervix	Uterus
Threatened Abortion	Slight to moderate	Not dilated	Equal to dates
Inevitable Abortion	Moderate to heavy	Dilated	Less than or equal to dates
Incomplete Abortion	Slight to heavy	Dilated With Partial expulsion of products of conception	Less than or equal to dates
Complete Abortion	Slight to moderate	Dilated or closed	Less than dates
Missed Abortion	Little or none	Closed	Less than or equal to dates
Cervical abortion	Minimal	▪ The cervical canal is ballooned and over-distended by the ovum. ▪ The external os is closed.	The body of the uterus is felt well contracted as a firm mass on the top of the ballooned and thinned cervical canal.
Ectopic pregnancy	Light	▪ Closed cervix ▪ Cervical motion tenderness "Dood's sign" ▪ Paracervical pulsations manifest in one vaginal fornix or the other: "Nixon's sign".	▪ Uterus slightly larger than normal ▪ Uterus softer than normal
Molar pregnancy	Heavy	▪ Dilated cervix ▪ Partial expulsion of products of conception which resemble grapes	▪ Uterus larger than dates ▪ Uterus softer (feels doughy)
Incarcerated retroverted gravid uterus	No bleeding	▪ Markedly displaced forwards and upwards behind the symphysis pubis ▪ An elastic mass is felt in Douglas pouch, which is continuous with the cervix and conforms with the characteristics of the pregnant uterus	The body of the uterus is not felt through the anterior fornix



Associated lesions:

While you perform vaginal examination during pregnancy for whatever cause, search for local lesions in the genital tract associated with pregnancy.

Lesions of the vulva:

1. Varicose veins
2. Fungal infection of the vulva (Moniliasis)
3. Diabetic vulvitis
4. Condylomata accuminata.
5. Non specific vulvitis, urethritis and Bartholinitis as well as other infections in the vulva
6. Complete perineal tear

Lesions of the vagina:

1. Congenital anomalies of the vagina as congenital stenosis, vaginal septum, ...etc.
2. Moniliasis and trichomoniasis
3. Obstructive lesions in the vagina. Cicatricial contraction of the vagina following a difficult labour or other traumatic accidents and / or vaginal tumours

Lesions of the cervix:

1. Cervical lacerations
2. Cervical erosion and polypi
3. Fibromyoma of the cervix
4. Carcinoma of the cervix.

Lesions of the uterus:

1. Fibromyoma of the uterus
2. Congenital anomalies of the uterus.

Lesions of the adnexae: ovarian tumours

B) Vaginal examination late in pregnancy:

i. Normal pregnancy:

Late in pregnancy and near full term, a vaginal examination in normal pregnancy aimed to study the following:

- 1- Passages
- 2- The presenting part of the fetus.
- 3- Cephalopelvic relationship
- 4- Pelvic score

1) The passage:

Bony pelvis:

Clinical internal pelvimetry is still used to get a general idea about the pelvic form and capacity. It is done from 32 week onwards because if it is done before this time, it usually gives a false impression about the capacity of the pelvis which gradually enlarges, as the pregnancy advances due to softening of the pelvic joints and ligaments.

It is always advisable to empty the rectum before taking the internal measurements.

1. The general capacity of the pelvis as a whole.

2. The width of the sub-pubic angle.

3. Interischial spines diameter:

Notice the distance between the spines and the direction of the spines

4. Length of the sacrospinous ligament:

This is measured in finger's breadth during the vaginal examination. Normally it measures 2.5 finger's breadth. It is short in the android pelvis and much longer in the anthropoid pelvis.



5. The height, width, curvature and promontory of the sacrum.

6. The mobility of the coccyx.

7. The depth, thickness and inclination of the symphysis pubis.

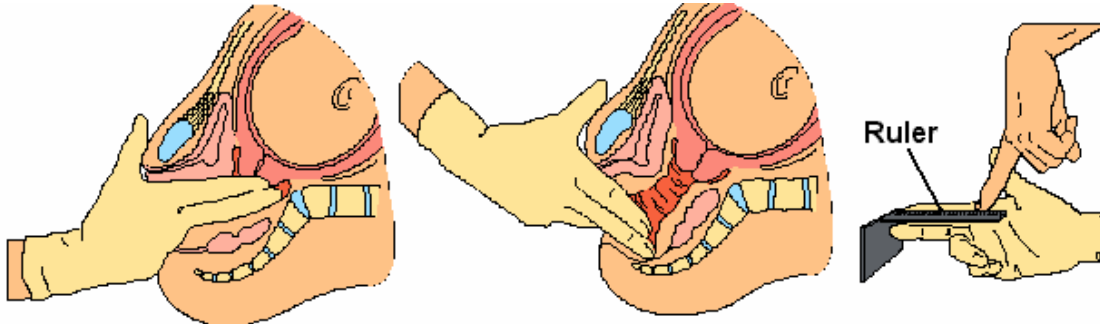
8. The inclination of the lateral pelvic walls.

9. The direction of the superior pubic rami forming the fore-pelvis.

10. Diagonal conjugate diameter:

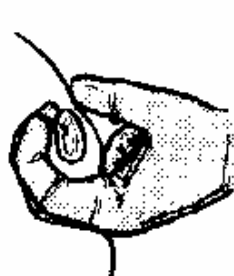
To measure the diagonal conjugate, the middle and index fingers are passed upwards in the vagina till the middle finger touches the promontory.

The point on the radial side of the index finger that impinges on the lower border of the symphysis pubis is then marked by the index finger of the other hand. The examining



Measuring diagonal conjugate

Measuring the anteroposterior diameter of the outlet



Feeling depth, thickness & inclination of symphysis pubis



Feeling the height, width, curvature & promontory of the sacrum.

fingers are withdrawn, and the distance between the tip of the middle finger and the point marked, is measured by a ruler.

The usual length of the diagonal conjugate is about 13 cms. By subtracting from this about 1-1.5 cms, the length of the true conjugate diameter (antero posterior diameter of the inlet) is obtained.

N.B. care must be taken not to mistake a false promontory (bulging at the junction of the first and second pieces of the sacrum) or spondylolisthesis (falling forward of the last lumbar vertebra in front of the sacrum) for the actual promontory.

11. Anteroposterior diameter of the outlet:

Internally it is measured by passing two fingers in the vagina which are then raised till they touch the under surface of the symphysis pubis and this point is marked. The hand is then withdrawn and the distance is measured on the fingers with a ruler.

N.B. Internal pelvimetry is particularly important in the primigravida or in the multipara with a history of previous difficult labours. If the head is found engaged, examination of the pelvic inlet is unnecessary and impossible. In such cases, examination of the pelvic outlet should be performed.

Soft tissues of the birth canal:

Look for infection, cicatricial contraction, congenital anomalies, tumours rigid or lax pelvic floor ... etc.

2) The presenting part of the fetus:

Vaginal route is inefficient for examination of the presenting part of the fetus during pregnancy when it is lying high up above the pelvic inlet. However, it is easier to identify the details of the presenting part during labour particularly when the cervix is dilated and the membranes are ruptured.

3) Cephalo pelvic relationship:

The fetal head is the best pelvimeter. In all primigravidae in whom the head is not engaged at or near term, estimation of the cephalo-pelvic relationship is essential to exclude a disproportion or a contracted pelvis, before ascribing the non-engagement to any of its other causes. In the multipara, estimation of the cephalo-pelvic relationship is essential in cases with bad obstetric history such as prolonged labour, operative delivery:

Time of choice for estimating cephalo-pelvic relationship:

The test is to be performed at the 36th or 37th week of pregnancy and repeated at weekly intervals till full term ; as at that time the fetal head is sufficiently large to allow for proper judgment; and in a good number of cases, the head becomes engaged, and hence there will be no necessity for performing the test.

Methods of estimation of the cephalo-pelvic relationship:

Cephalo-pelvic relationship is estimated by several methods either by abdominal methods, vaginal methods or by combined abdominal and vaginal methods.

Pinard-Miller-Kerr method (combined abdominal and vaginal):

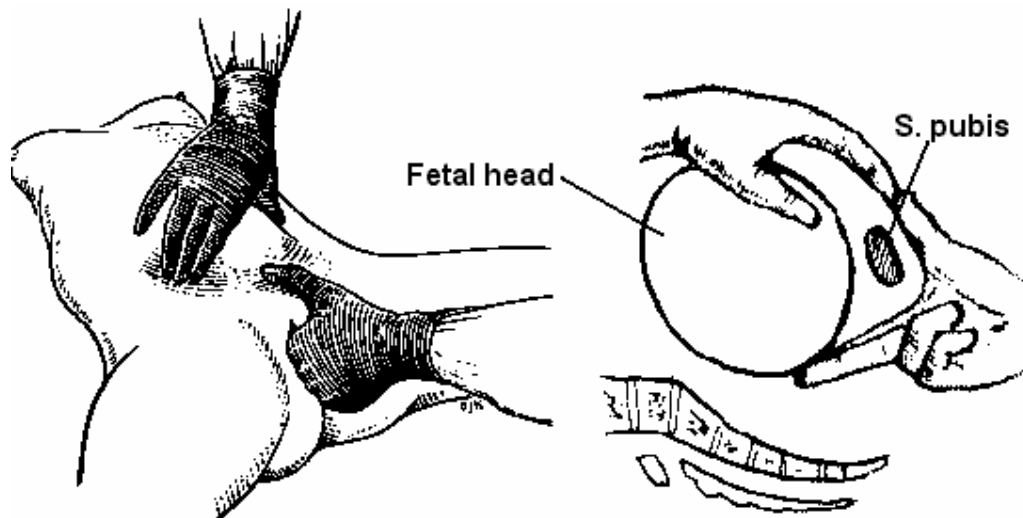
This is the most widely used method for estimating the cephalo-pelvic relationship and may give you a much more accurate assessment of the level of the head than either abdominal or vaginal examination alone.

Position of the patient: The patient lies on her back with the head and the shoulders slightly raised on a pillow. The thighs are either extended and wide apart, or flexed in the lithotomy position.

Technique:

- The bladder and the rectum must be empty
- The abdominal muscles must be relaxed, and anesthesia may be given
- The index and middle fingers of the examiner's right hand are introduced in the vagina, and placed at the level of the ischial spines; while the thumb is placed on the anterior surface of the symphysis pubis.

- The left hand, placed on the lower abdomen, pushes the head downwards and backwards into the pelvis. This may be helped by an assistant applying fundal pressure or helping the patient to the semisitting position.
- If the head could be pushed down in the pelvis till it reaches the level of the ischial spines, denoting its full engagement, cephalopelvic disproportion is excluded.

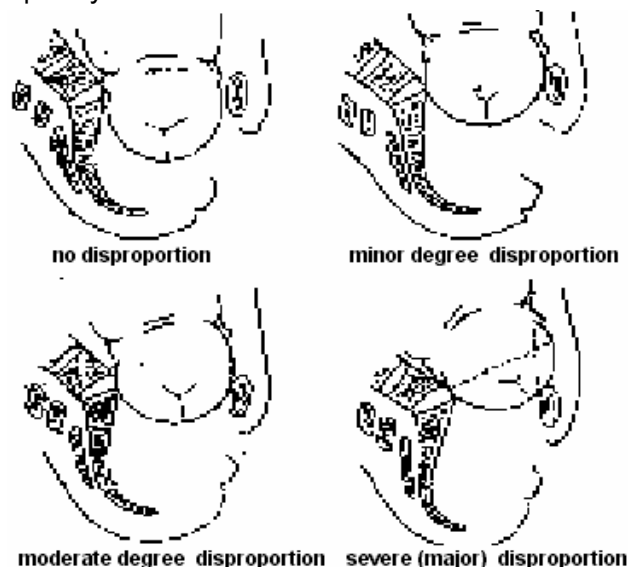


Pinard-Miller-Kerr method for estimating cephalo-pelvic relationship

- If the head could not be pushed down in the pelvis till it reaches the level of the ischial spines, the thumb on the anterior surface of the symphysis, should feel the relation of the anterior most part of the head to the top of symphysis pubis and whether this part of the head is:
 - a) Over-riding the symphysis pubis and the degree of overlap.
 - b) Flush with anterior surface of the symphysis, i.e. over-riding only the thickness of the symphysis pubis either partly or completely.
 - c) Not over-riding the symphysis.

Interpretation of the findings:

- If the head could be fully engaged:
there is *no disproportion* between the head and pelvic inlet.
- If the head does not enter the pelvis, though no part of it overlaps the symphysis: this is described as *minor degree cephalic pelvic disproportion*.



- c. If the head does not enter the pelvis, and is found overlapping part or the whole thickness of the symphysis pubis, so that the anterior parietal bone is flush with the anterior surface of the symphysis pubis: this is considered as *moderate degree cephalo-pelvic disproportion*.
- d. If the head does not enter the pelvis, and is found over-riding or overhanging the anterior surface of the symphysis pubis: this is considered as *severe or major degree cephalo-pelvic disproportion*.

4) **Pelvic score:**

During vaginal examination, the unripe cervix feel like the tip of the nose. As the cervix ripens, it will soften up. A ripe cervix will feel softer and more pliable, like the lips or the tongue.

The condition of the cervix is an important factor in determination of approaching labour and prediction of successful induction. When

the ripening has not occurred there is a greater chance of long labour & fetal hypoxia.

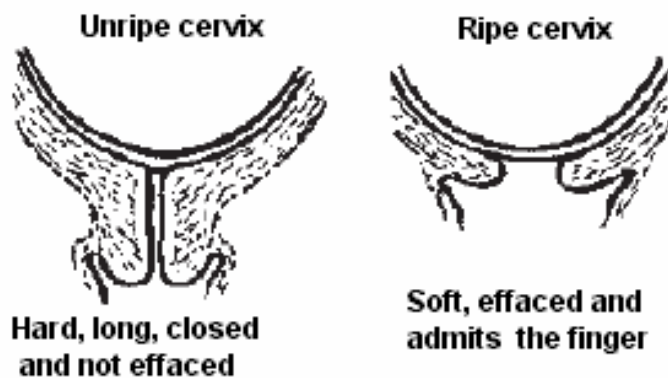
A system that evaluate cervical ripening has been developed by Bishop in 1964. This entails careful evaluation of the cervix for its general position in relation to the long axis of the vagina, its dilatation, its effacement, its consistency in addition to the station and position of the presenting part.

Bishop scoring system (modified):

State	0	1	2	3
Cx. dilatation (cm)	Closed	1 - 2 cm	3 - 4 cm	5 - 6 cm
Cx. length (cm)	3cm	2cm	2 cm	Fully effaced
Cx. position	Posterior	Central	Central	-
Cx. consistency	Firm	Softish	Soft	-
Head station	- 3	- 2	- 1	Engaged +1,+2

A score: 0 - 5 = difficult labour 6 - 13 = easy induction

The finding of high score (8 or more), strongly implies that delivery is imminent within few days, irrespective of the duration of pregnancy



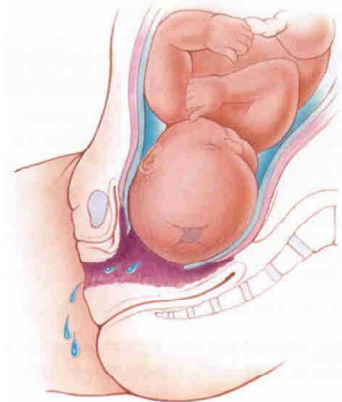
ii. Pathological pregnancy:

Late in pregnancy and near full term, a vaginal examination in pathological pregnancy aimed to study the following:

- 1- Prelabour rupture of membranes
- 2- The cause of bleeding in antepartum haemorrhage.

1- Prelabour rupture of membranes:

This term is used to describe those cases in whom the membranes rupture prior to the onset of labour. Aseptic vaginal examination using sterile dry cusco speculum is essential to confirm the diagnosis by demonstrating the escaping amniotic fluid through the os. In cases of doubt, manipulations of the presenting part vaginally, and/or increasing the intra-abdominal pressure by an assistant compressing the body of the uterus between his hands, may serve to clear the diagnosis.



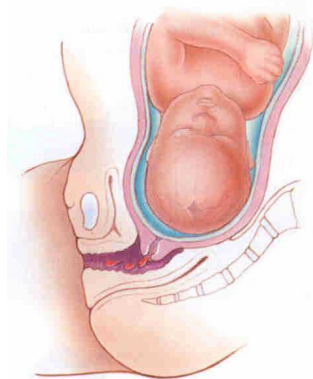
Fluid Type	Color	Odor
Amniotic fluid	clear	none
Urine	yellow	yes

Detection of fetal and amniotic fluid products in the vagina: amniotic fluid can be detected by

- a) Changes in the pH of the vagina from the usual pH 4.5-5.5 to a pH of 7-7.5.
- b) The detection of Palm-leaf reaction in the vaginal discharge.
- c) The presence of fat globules, lanugo hairs and vernix caseosa in the vagina.

2- Antepartum hemorrhage:

In the past , vaginal examination (double set up examination) was used for diagnosis of placenta previa. However, with the advent of ultrasound this examination belongs to the history of medicine and now vaginal examination using a speculum is performed to exclude incidental haemorrhage (haemorrhage from surface lesions) in cases of antepartum hemorrhage after exclusion of placenta previa by ultrasound.



II) Vaginal examination during labour:

If the patient had not been examined before during pregnancy, she should be examined at the very onset of labour to exclude the presence of any pathological lesion, particularly soft tissue obstruction, pelvic cavity and cephalopelvic disproportion.

Vaginal examination during labour is intended to study the following:

1. Onset of labour
2. Progress of labour
3. The cervical canal.
4. The bag of membranes.
5. The presenting part of the fetus.
6. Vaginal signs of obstructed labour.

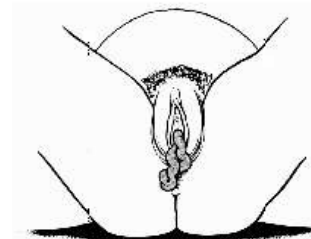
N.B. Do not do vaginal examinations in the presence of fresh bleeding, because this may indicate a placenta previa. Performing a vaginal examination in this instance might tear the placenta and cause hemorrhage, resulting in danger to both mother and fetus.

Procedure:

1. **Wash your hands:** to prevent spread of microorganisms.
2. **Prepare equipment:** sterile examining gloves, sterile lubricant, antiseptic solution.
3. **Dorsal position**
4. **Put on sterile examining gloves**
5. **Pour antiseptic solution:** over vulva using non- dominant hand.
6. **Inspect the vulva and perineum:** place non dominant hand on the outer edges of the woman's vulva and spread her labia while inspecting the external genitalia for lesions. Look for ulceration, condylomata, varices, vesicles and any perineal scarring or rigidity.
N.B. Presence of any vesicles may indicate herpes infection and possibly contraindicate vaginal delivery.
7. **Look for escaping amniotic fluid or the presence of umbilical cord or bleeding:**

Amniotic fluid implies membranes have ruptured and umbilical cord may have prolapsed. Bleeding may be a sign of placenta previa.

N.B. Do not do a vaginal examination if a possible placenta previa is present.



Prolapsed umbilical cord

8. **Introduce your index and middle fingers of dominant hand gently into the vagina:** ,if

there is no no bleeding or cord visible, directing them toward the posterior vaginal wall. Stabilize the uterus by placing your non dominant hand on the woman's abdomen.

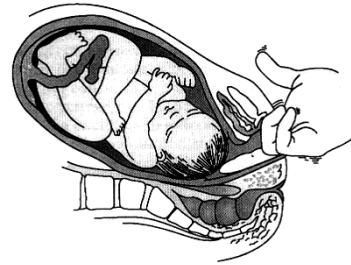


9. **Examine the cervix:**

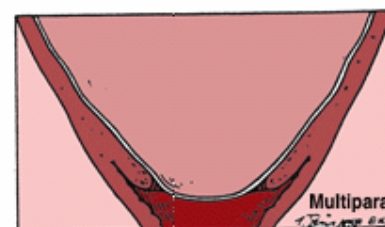
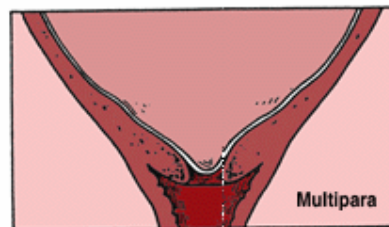
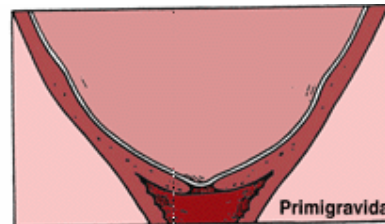
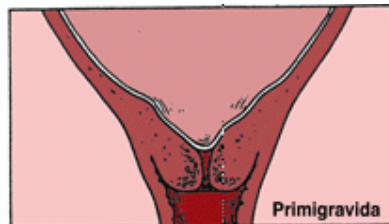
- A. **Palpate for cervical consistency:** to feel if firm or soft. Firm is similar to the tip of a nose; soft is as pliable as an earlobe.

The anterior rim is usually the last portion to thin.

- B. **Estimate the degree of effacement:** the cervix becomes progressively shorter in early labour. The length of the cervix is measured by assessing the length of the endocervical canal. This is the distance between the internal os and the external os on digital examination.



The endocervical canal of an uneffaced cervix is approximately 3 cm long, but when the cervix is fully effaced there will be no endocervical canal, only a ring of thin cervix. The length of the cervix is measured in centimetres.



Beginning effacement

Complete effacement

- C. **Measure the extent of dilatation:** best measured by comparing the degree of separation of the fingertip on vaginal examination. An index finger averages about 1 cm; a middle finger about 1 1/2 cm. If they can both enter the cervix, the cervix is dilated 2 1/2 to 3 cm. If there would be room for double the width of your examining fingers in the cervix, the dilatation is about 5 to 6 cm. When the space is four times the width of your fingertips, dilatation is complete - 10 cm.

Dilatation is usually expressed in centimeters, in general the fingers can estimate the cervical dilatation:

1.5 cm: one finger fits tightly through the cervix and touches the fetal head

2 cm: one finger fits loosely inside the cervix, but cervix can not fit two fingers

3 cm: two fingers fit tightly inside the cervix

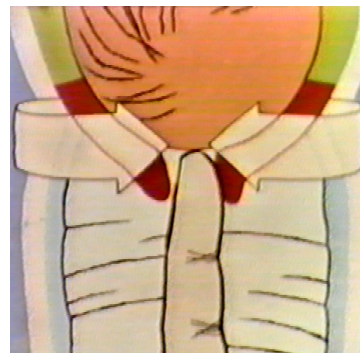
4 cm: two fingers fit loosely inside the cervix

6 cm: there is still 2 cm of cervix still palpable on both sides of the cervix

8 cm: there is only 1 cm of the cervix still palpable on both sides of the cervix

9 cm: Not even 1 cm is left laterally, or there is an anterior lip of the cervix

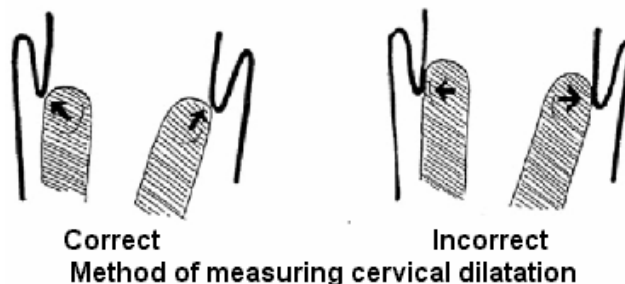
10 cm: cervix could not be felt anywhere around the fetal head.



In assessing the dilatation of the cervix, it is easy to make 2 mistakes:

- i. If the cervix is very thin, it may be difficult to feel, and the patient may be said to be fully dilated, when in fact she is not.

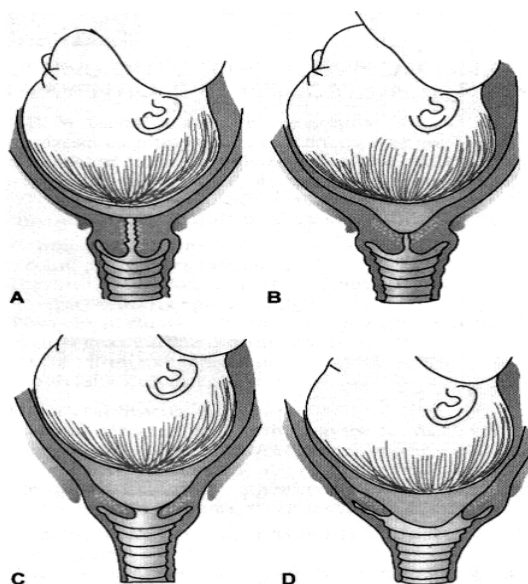
- ii. When feeling the rim of the cervix, it is easy to stretch it, or pass the fingers through the cervix and feel the rim with the side of the fingers. Both of these methods cause the recording of dilatation to be more than it really is. The correct method is to place the tips of the fingers on the edges of the cervix.



- D. Pathological lesions of the cervix: which have significant effect on the course of labour are sometimes met with as hanging cervix or curtain like cervix, edematous cervix, rigid cervix, descent or prolapse of cervix and lacerations of cervix .

10. Assess the membranes:

Rupture of the membranes may be obvious if there is liquor draining.



Cervical change with intact membranes

However, one should always feel for the presence of membranes overlying the presenting part. If the presenting part is high, it is usually quite easy to feel intact membranes. It may be difficult to feel them if the presenting part is well applied to the cervix. In this case, one should wait for a contraction, when some liquor often comes in front of the presenting part, allowing the membranes to be felt. Sometimes the umbilical cord can be felt in front of the presenting part (a cord presentation).

N.B. The caput succedaneum forming on the fetal head after rupture of the membranes is occasionally mistaken for an intact bag of membrane.

Observe the condition of the liquor when the membranes rupture. The presence of meconium may change the management of the patient as it indicates that fetal distress has been and may still be present.

11. **Assess the presenting part:**

a. **Identifying the presenting part:**

The presenting part is usually the head but may be the breech, or the shoulder.

- Features of a vertex presentation: the posterior fontanelle is normally felt. it is a small triangular space. In contrast, the anterior fontanelle is diamond shaped. if the head is well flexed, the anterior fontanelle will not be felt. If the anterior fontanelle can be easily felt, the head is deflexed.

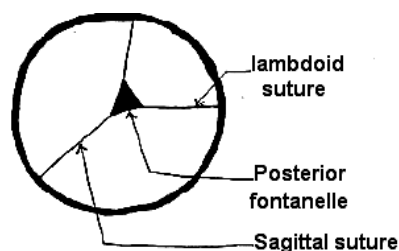
- Features of a face presentation:

- i) Instead of a firm skull, something soft is felt.
- ii) The gum margins distinguish the mouth from the anus.
- iii) The cheek bones and the mouth form a triangle.
- iv) The orbital ridges above the eyes can be felt.
- v) Other helpful landmarks are the nares with the septum

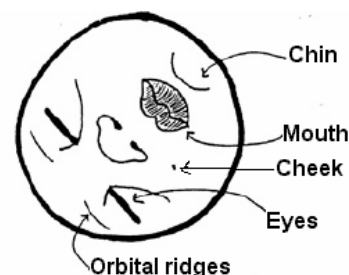
- Features of a brow presentation: the presenting part is high. the anterior fontanelle felt is on one side of the pelvis, the root of the nose on the other side, and the orbital ridges may be felt laterally.

- Features of a breech presentation:

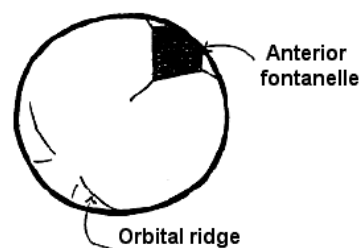
- i) Instead of a firm skull, something soft is felt.



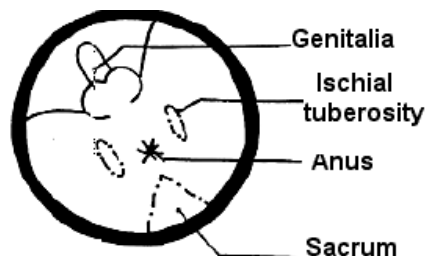
Features of vertex presentation



Features of face presentation



Features of brow presentation

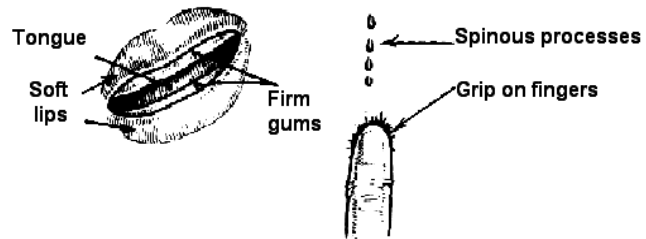


Features of breech presentation

- ii) The anus does not have gum margins.
- iii) The two ischial tuberosities enclosing between them the anal orifice, the coccyx and the back of the sacrum with its characteristic row of spinous processes. The anus and the ischial tuberosities form a straight line.
- iv) The feet of the fetus are felt in complete breech.

N.B. The anal orifice is differentiated from the mouth by:

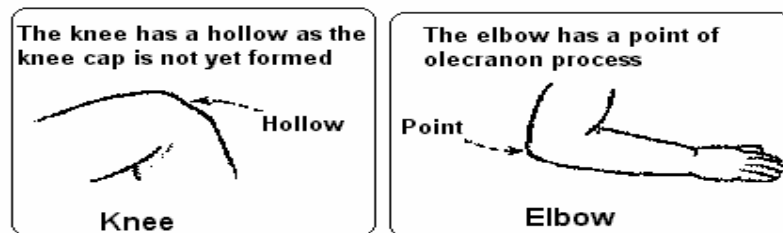
- a) Its sphincteric action.
- b) The absence of alveolar border.
- c) By lying along the line joining the two ischial tuberosities.



Difference of the mouth from the anal orifice

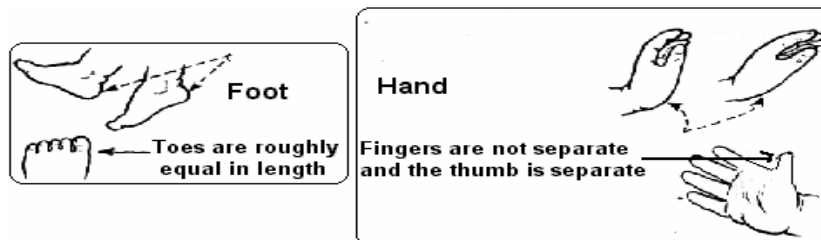
However, passing the examining finger through the anal orifice of the fetus is not recommended in every case, as this may lead to lacerations of the rectum or the hymen in the female fetus).

N.B. In knee presentation, the knee is differentiated from the elbow by its bigger bulk and the absence of the sharp epitrochlear bone. In footling presentation, the



characteristics of the foot are described above and these make the diagnosis rather easy. It is important to exclude a complex presentation in these cases.

The foot can be differentiated from the hand as in the following table:

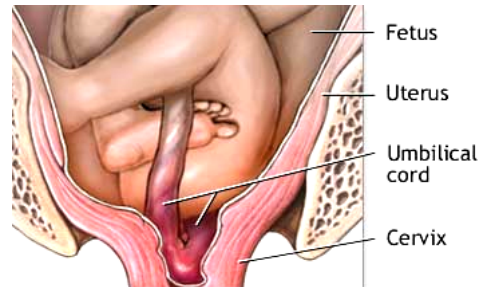


<u>Foot</u>	<u>Hand</u>
Presence of the heel.	Absence of the heel.
Toes are short in relation to the sole.	Fingers are long in relation to the palm.
Limited movement of the big toe.	Free movement of the thumb.
Line of toe tips: straight.	Line of the finger tips: curved.

- **Features of a shoulder presentation:** the presenting part is usually high. Diagnosis will be quite easy if the arm has prolapsed. The shoulder is not always that easy to identify, unless the arm can be felt. However, It may be diagnosed by feeling the tip of the acromion, the clavicle, the axilla, and the ribs with the intercostal spaces between them (a most helpful landmark).

- **Cord presentation:**

Cord presentation is most difficult to diagnose early in labour as the loop of the cord sometimes recedes from the examining hand and simulates a limb or fingers of the fetus. However, when the membranes are ruptured (cord prolapse), or a big loop comes down to be felt or hooked by the finger, the diagnosis is very easy.



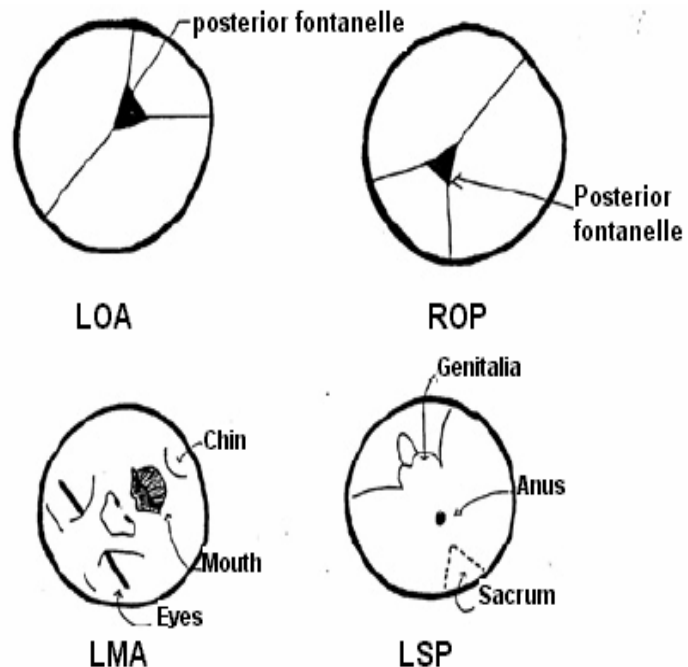
- **Complex presentation:**

Here more than one part of the fetus is felt coming down, such as head and hand or head and foot. Care must be taken not to mistake such cases for breech or shoulder presentations.

b. Determining the position of the presenting part:

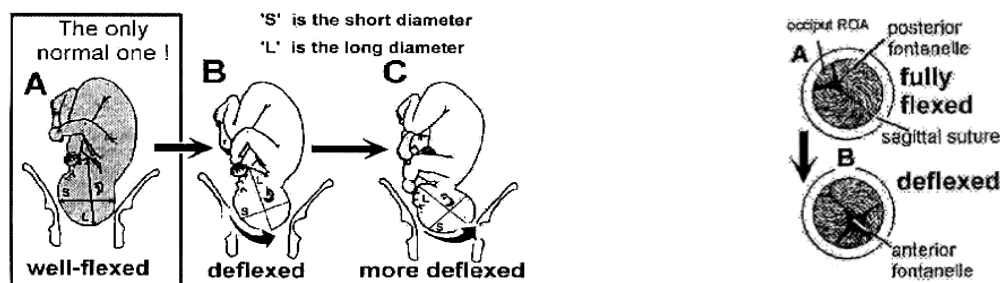
Position means the relationship of a fixed point on the presenting part (i.e. the point of reference or the denominator) to the mother's pelvis. The position is determined on vaginal examination.

1. In a vertex presentation the point of reference is the posterior fontanelle (i.e. the occiput).
2. In a face presentation the point of reference is the chin (i.e. the mentum).
3. In a breech presentation the point of reference is the sacrum of the fetus.



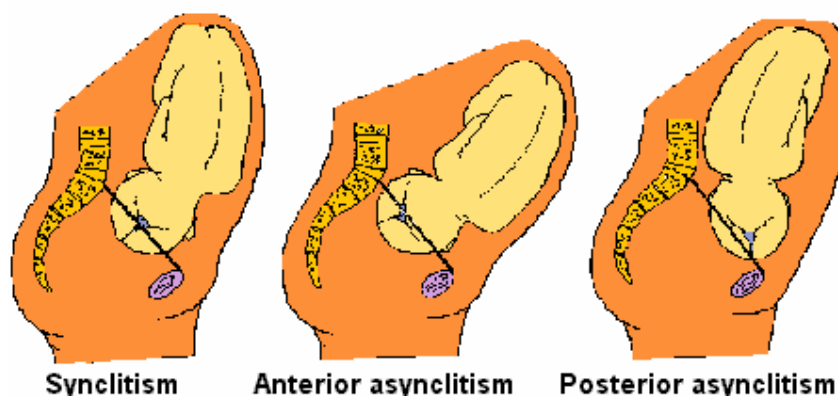
Examples of positions of the presenting part

- c. **Assessing the degree of flexion:** of the head in vertex presentations can be judged by noticing the level of both fontanels.



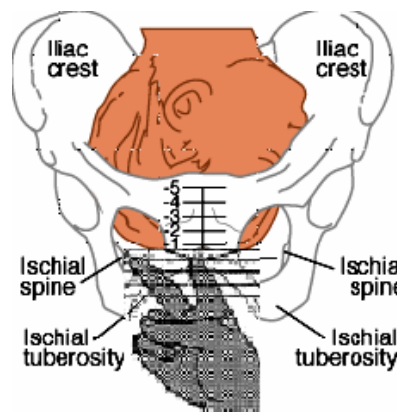
In cases of exaggerated flexion, the posterior fontanel is much lower, while the anterior one is out of reach; a condition which is described as *posterior fontanel presentation or Roederer's obliquity*. In the usual degree of flexion, the posterior fontanel is felt on one side and lower down, while the anterior fontanel is felt with difficulty on the opposite side and at a higher level. In cases where there is deflection of the head, the anterior fontanel is within easy reach, at the same or even at a lower level than the posterior, a condition which is known as *anterior fontanel presentation*, and is commonly found in occipito-posterior position and deep transverse arrest of the vertex. Further deflection results ultimately in partial or complete extension of the head (brow or face presentation).

- d. **Identifying asynclitism or synclitism:** by noticing the disposition of the sagittal suture of the head in relation to the symphysis pubis and the sacral promontory. When the sagittal suture is nearer to the promontory of sacrum, the anterior parietal bone will be lower and the condition is then described as *anterior parietal presentation or anterior asynclitism "Naegle's obliquity"*. If the sagittal suture is nearer to the symphysis pubis, the posterior parietal bone will be lower down and the condition is then known as *posterior parietal presentation or posterior asynclitism "Litzmann's obliquity"*. When the sagittal suture lies equidistant from the promontory and the symphysis, the head is described as "synclitic".



e. Determining the station of the presenting part:

Identify the presenting part. Ischial spines are palpated as notches at the 4 and 8 o'clock positions at the pelvic outlet. Station is the number of centimeters above or below the spines where the presenting part is. Station is measured from minus 5 to plus 5. The ischial spine plane is considered as station zero, the centimeters above are minus and those below are plus. The level of the lowermost part of the head is noted in relation to these divisions. Thus, when at station (-5) the head is floating, while from station (-4) to (-1) it is engaging. A fully engaged vertex lies with its lowermost part at station zero. At station (+1), (+2) ... etc., the engagement is becoming deeper and deeper. Plus 5 means the baby's head not only has come down past the ischial spines, but also is visible at the opening of the vagina (also known as crowning). In estimating the degree of engagement in this way, the examiner must be careful not to mistake the lowermost part of the caput succedaneum or an excessively moulded head, for the lowermost part of the head.

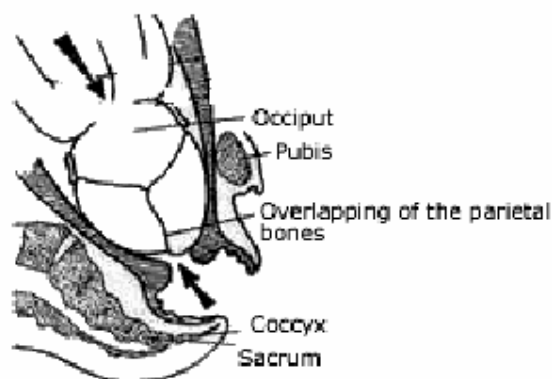


Using the ischial spines to measure descent of the head. Feel for the vertex with your index finger, then use your middle finger to feel for the ischial spines

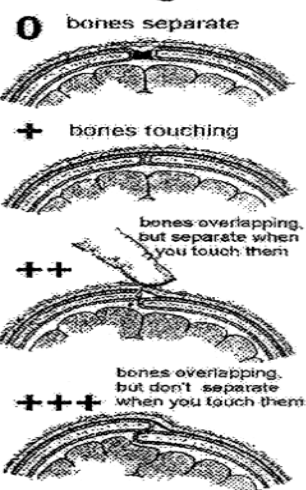
N.B. In face presentations, the head will not be engaged when the lowermost part of the face lies at the level of the ischial spine. The head is not fully engaged except when the face is quite low down in the pelvis, at the level of the ischial tuberosities (not spines) or even lower.

f. Look for changes in the presenting part:

▪ **Moulding:**



Moulding



In a cephalic (head) presentation, moulding is diagnosed by feeling overlapping of the sutures of the skull on vaginal examination, and assessing whether or not the overlap can be reduced (corrected) by pressing gently with the examining finger.

Grading the degree of moulding:

The occipito-parietal and the sagittal sutures are palpated and the relationship or closeness of the two adjacent bones assessed. The amount of moulding recorded on the partogram should be the most severe degree found in any of the sutures palpated.

The degree of moulding is assessed according to the following scale:

0 = Normal separation of the bones with open sutures.

1+ = Bones touching each other.

2+ = Bones overlapping, but can be separated with gentle digital pressure.

3+ = Bones overlapping, but cannot be separated with gentle digital pressure.

3+ is regarded as severe moulding.

▪ **Caput succedaneum:**

The presence of caput succedaneum can also be felt as a soft, boggy swelling, which may make it difficult to identify the presenting part of the fetal head clearly. With severe caput the sutures may be impossible to feel.



Caput succedaneum

12. Vaginal signs of obstructed labour:

In cases of obstructed labour, the following signs are encountered during the vaginal examination:

1. Vulva: Edematous with occasional fissuring.
2. Vagina : Swollen; hot and dry.
3. Cervix : Edematous, hanging and not adapted to the presenting part.
4. Presenting part: Impacted in the pelvic inlet or deep in the pelvic cavity, with excessive caput succedaneum, and excessive moulding in head presentation.
5. Occasionally serosanguineous discharge, frank blood or changed and infected liquor may be passed.

V- Rectal and rectovaginal examination

Rectal examination:

Examination of the patient per rectum (P.R.) is valuable in obstetric diagnosis in some cases.

Indications during pregnancy:

The P.R. is a better method of examination of Douglas pouch than the vaginal examination.

Thus, it is important to do a rectal examination in the following cases:

- a) Ectopic pregnancy with or without a pelvic haematocoele.
- b) Retroversion flexion of the gravid uterus.
- c) Small ovarian tumours or fibromyomata in Douglas pouch.
- d) Pelvic peritonitis of whatever origin.

Method:

- The patient is placed in a position where the anus is accessible and relaxed (lying on the side, squatting on the examination table, bent over the examination table, etc).
- It is always advisable to inspect the anal orifice which may reveal local abnormalities as piles.
- Inserts a gloved and lubricated finger into the rectum through the anus and palpate the insides
- Insert a lubricated, gloved finger of one hand into the rectum and use the other hand to press on the lower abdomen or pelvic area.

Rectovaginal examination:

To perform this test, the middle finger is pushed into the rectum, while the index finger is pushed into the vagina. The other hand is placed on the lower abdomen. Masses or accumulations in the recto-vaginal septum or Douglas pouch can be then felt easily between the two internal fingers, or between the internal fingers and the external hand placed on the lower abdomen.

VI- Obstetric diagnosis

The diagnosis of the obstetric case:

Should include the following items **in order**:

1. **Gravidity** (in case the age is significant, it must be included as in elderly primigravida)
2. **Parity**
3. **Duration of pregnancy in weeks**
4. **Lie**
5. **Presentation**
6. **Position**
7. **Engagement**
8. **Any complication (specific condition) of the current pregnancy** e.g. pregnancy induced hypertension (mention severity), antepartum hemorrhage, hydramnios, Rh incompatibility, IUGR, IUFD, PROM, CPD
9. **Associated disease** e.g. heart disease (mention the etiology, pathology, and whether compensated or not), DM (mention class and controlled or not), hypertension, ovarian tumour, fibroid, ...etc.
10. **Any other significant historical data that may affect the line of management** e.g.
 - History of preterm labour, fetal losses (repeated abortion, SB), neonatal deaths
 - History of previous CS & other uterine scars
 - History of repair of vesicovaginal fistula or prolapse
 - History of infertility

The following are examples of obstetric diagnoses:

• Elderly primigravida, pregnant 36 week, longitudinal lie, cephalic presentation, right occipitoposterior, head not engaged, severe pregnancy induced hypertension, history of previous primary infertility 10 years.
--

• 4 th gravida, 3 rd para, pregnant 34 week, transverse lie, shoulder presentation, left scapuloanterior, PROM, previous CS

• 6 th gravida, 2 nd para, pregnant 37 week, longitudinal lie, cephalic presentation, left occipitoanterior, head engaged, intrauterine growth retardation, rheumatic heart (mitral stenosis), previous history of repeated abortions.
--

• Primigravida, pregnant full term, longitudinal lie, cephalic presentation, left occipitotransverse, head not engaged, mild degree of cephalopelvic disproportion.

VII- CLINICAL TIPS

TERMS & DEFINITIONS

The following terms are used in recording the history of patients:

- **Gestation:** the number of weeks of pregnancy since the first day of the LMP
- **Abortion:** pregnancy terminated before the end of 28 weeks' gestation
- **Term:** the normal duration of pregnancy (38 to 42 weeks' gestation)
- **Antepartum:** time between conception and the onset of labor; usually used to describe the period during which a woman is pregnant; used interchangeably with prenatal
- **Intrapartum:** time from the onset of true labor until the birth of the infant and placenta
- **Postpartum:** time from the delivery of the placenta and membranes until the woman's body returns to a nonpregnant condition
- **Preterm or premature labor:** labor that occurs after 28 weeks' but before completion of 37 weeks' gestation
- **Postterm labor:** labor that occurs after 42 weeks' gestation
- **Gravidity:** number of pregnancies, including present pregnancy regardless of duration, mode of termination and outcome.
- **Nulligravida:** a woman who has never been pregnant
- **Primigravida:** a woman who is pregnant for the first time
- **Multigravida:** a woman who is in her second or any subsequent pregnancy
- **Parity:** number of deliveries after 28 weeks' gestation regardless of mode of termination and outcome.
- **Nullipara:** a woman who has had no births at more than 28 weeks' gestation
- **Primipara:** a woman who has had one birth at more than 28 weeks' gestation, regardless of whether the infant was born alive or dead
- **Multipara:** a woman who has had two or more births at more than 28 weeks' gestation
- **Stillbirth:** an infant born dead after 28 weeks' gestation

The terms *gravida* and *para* are used in relation to pregnancies, not to the number of fetuses. Thus twins, triplets, and so forth count as one pregnancy and one birth.

EXAMPLE OF HISTORY & EXAMINATION OF AN OBSTETRIC CASE

Case Presentation:

The case should be summarized and presented concisely, emphasizing the relevant facts. A provisional diagnosis, based on the history and physical examination should be made.

Students will be expected to show that they have formulated a plan of care. Questions will be asked to assess the student's clinical reasoning and understanding of the science/physiology/pathology of the condition involved.

Of course history taking and examination should fulfill all the items of the obstetric sheet, here we mention important items in every particular case and its significance in decision making and management.

CASE : PROLONGED PREGNANCY

(ADMITTED FOR INDUCTION or ADMITTED FOR "ASSESSMENT")

A patient who is now 42 weeks pregnant or who is now at term plusdays in hospital for induction of labour / in hospital for assessment.

Menstrual history: verify the date of last normal menstrual period

Obstetric History:

- The most important factor is mode of delivery of previous pregnancies
- If you are presenting a parous woman with no previous C.S., and with good obstetric history there shouldn't be any difficulty in inducing labour for post-term pregnancy unless she is highly parous and has a high head, breech or unstable lie.
- If previous C.S. (i.e. contraindication to induction), elective repeat C.S. is to be performed.
- If previous bad obstetric history e.g. previous S.B., you don't want to take any chances and will want to get her delivered as soon as possible.
- If Para 0, the chance of prolonged labour, failed induction, intrauterine death, fetal distress ...etc. is greatly increased i.e. all complications of post-term pregnancy are increased in nulliparous women.
- Duration of previous pregnancies (liable to recur)

Past medical or surgical history: nothing special to emphasize in.

History of present pregnancy:

- Questioning the woman to if she is uncertain of her dates!
- Ask about lots of information about cycles, use of pills, time of booking visit, ultrasound scans.
- Date of quickening
- Make up your mind on whether there could be a dates error or not.
- Present admission: has she had
 - A C.T.G.?

- Ultrasound scan to assess amniotic fluid? + plus the rest of biophysical score
(fluid is the most important component when the pregnancy is prolonged)
- You also want to rule out fetal anomaly.
- Vaginal examination to see if cervix is favourable?
- Fetal movement counting chart?

General examination:

- Is she worried or anxious to be delivered or anxious to await spontaneous onset of labour.
- B.P. /Urinalysis - you would not be conservative with a prolonged pregnancy if there was hypertensive disease.

Abdominal examination:

- Fundal height: comment on appropriate for dates/ large/ small for dates

- Lie

- Presentation

Cephalic?

If breech or unstable lie you'll have to consider C.S.

If cephalic ?engaged or not- An unengaged head would make induction difficult or hazardous.

- Engagement: usually not engaged

- Liquor? reduced ?

- F.H.S

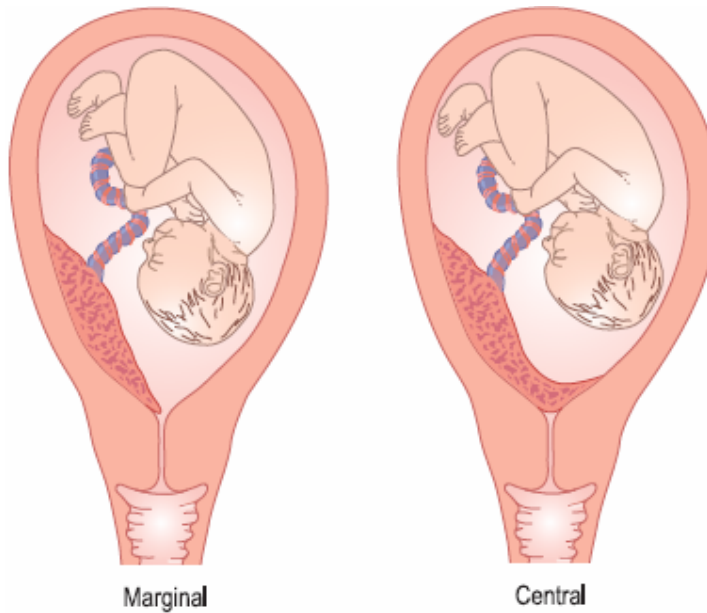
DIFFERENTIAL DIAGNOSIS IN OBSTETRICS

VAGINAL BLEEDING IN EARLY PREGNANCY

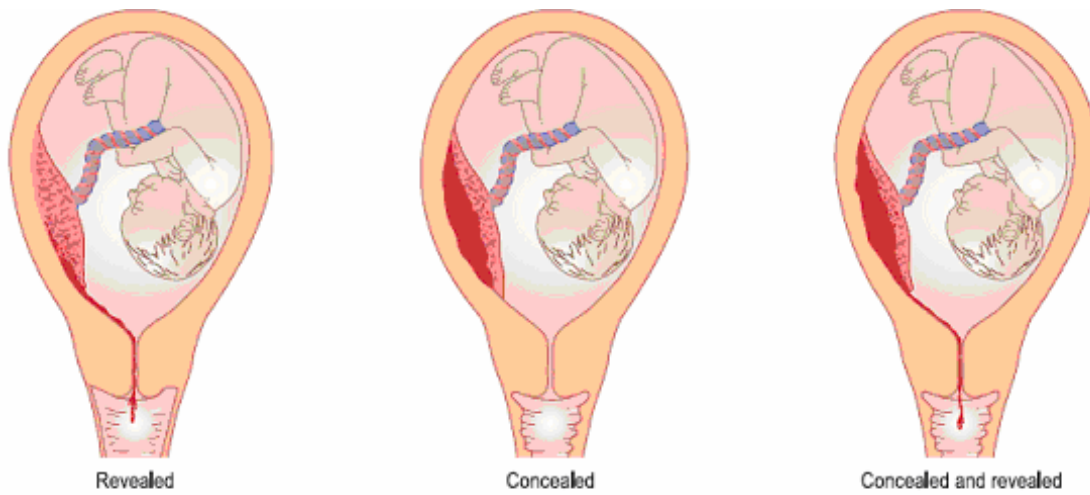
<i>Presenting symptom and other symptoms and signs typically present</i>	<i>Symptoms and signs sometimes present</i>	<i>Probable diagnosis</i>
• Light bleeding • Closed cervix • Uterus corresponds to dates	• Cramping/lower abdominal pain • Uterus softer than normal	<i>Threatened abortion</i>
• Light bleeding • Abdominal pain • Closed cervix • Uterus slightly larger & softer than normal	• Fainting • Tender adnexal mass • Amenorrhea • Cervical motion tenderness	<i>Ectopic pregnancy</i>
• Light bleeding • Closed cervix • Uterus smaller than dates • Uterus softer than normal	• Light cramping/lower abdominal pain • History of expulsion of products of conception	<i>Complete abortion</i>
• Heavy bleeding • Dilated cervix • Uterus corresponds to dates	• Cramping/lower abdominal pain • Tender uterus • No expulsion of products of conception	<i>Inevitable abortion</i>
• Heavy bleeding • Dilated cervix • Uterus smaller than dates	• Cramping/lower abdominal pain • Partial expulsion of products of conception	<i>Incomplete abortion</i>
• Symptoms of early pregnancy • Irregular spotting or bleeding • Slight uterine enlargement	• Abdominal and pelvic pain • Increased urinary frequency)	<i>Unruptured ectopic pregnancy</i>
• Acute abdominal and pelvic pain • Abdominal distension • Rebound tenderness • Pallor	• Collapse and weakness • Hypotension • Rapid, weak pulse (110 per minute or more)	<i>Ruptured ectopic Pregnancy</i>
• Heavy bleeding • Dilated cervix • Uterus larger than dates • Uterus softer (feels doughy) • Partial expulsion of products of conception which resemble grapes	• Nausea/vomiting • Spontaneous abortion • Cramping/lower abdominal pain • Ovarian cysts (easily ruptured) • Early onset pre-eclampsia • No evidence of a fetus	<i>Molar pregnancy</i>

VAGINAL BLEEDING IN LATE PREGNANCY

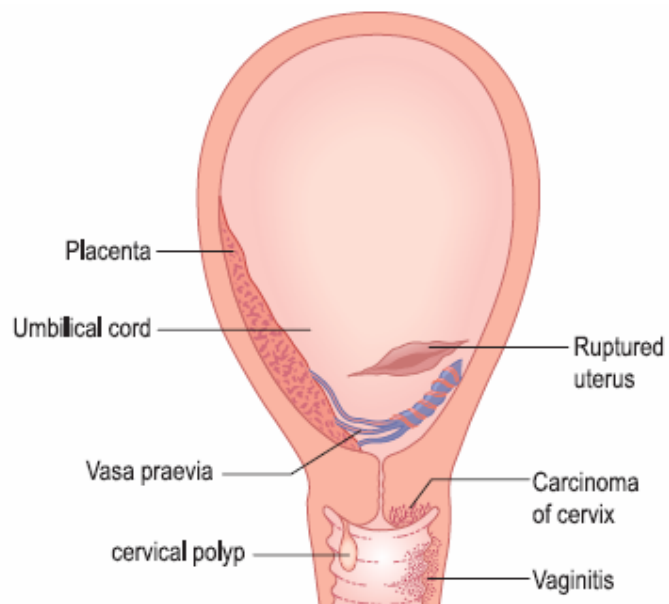
<i>Presenting symptom and other symptoms and signs typically present</i>	<i>Symptoms and signs sometimes present</i>	<i>Probable diagnosis</i>
Bleeding after 28 weeks gestation	- Shock - Bleeding may be precipitated by intercourse - Relaxed uterus - Fetal malpresentation (not engaged)/lower uterine pole feels empty - Normal fetal condition	<i>Placenta praevia</i>
- Bleeding after 28 weeks gestation (may be retained in the uterus) - Intermittent or constant abdominal pain	- Shock - Tense/tender uterus - Decreased/absent fetal movements - Fetal distress or absent fetal heart sounds	<i>Abruptio placentae</i>
- Bleeding (intra-abdominal and/or vaginal) - Severe abdominal pain (may decrease after rupture)	- Shock - Abdominal distension/ free fluid - Abnormal uterine contour - Tender abdomen - Easily palpable fetal parts - Absent fetal movements and fetal heart sounds - Rapid maternal pulse	<i>Ruptured uterus</i>



Placenta previa



Types of placental abruption.



Non-placental causes of antepartum
hemorrhage

DECREASED OR ABSENT FETAL MOVEMENTS

<i>Presenting symptom and other symptoms and signs typically present</i>	<i>Symptoms and signs sometimes present</i>	<i>Probable diagnosis</i>
- Decreased/absent fetal movements - Intermittent or constant abdominal pain - Bleeding after 22 weeks gestation (may be retained in the uterus)	- Shock - Tense/tender uterus - Fetal distress or absent fetal heart sounds	<i>Abruptio placentae</i>
- Absent fetal movements and fetal heart sounds - Bleeding (intra-abdominal and/or vaginal) - Severe abdominal pain (may decrease after rupture)	- Shock - Abdominal distension/ free fluid - Abnormal uterine contour - Tender abdomen - Easily palpable fetal parts - Rapid maternal pulse	<i>Ruptured uterus</i>
- Decreased/absent fetal movements - Abnormal fetal heart rate (less than 100 or more than 180 beats per minute)	Thick meconium-stained fluid	<i>Fetal distress</i>
Absent fetal movements and fetal heart sounds	- Symptoms of pregnancy cease - S-fundal height decreases - Uterine growth decreases	<i>Fetal death</i>

VAGINAL DISCHARGE DURING PREGNANCY

<i>Presenting symptom and other symptoms and signs typically present</i>	<i>Symptoms and signs sometimes present</i>	<i>Probable diagnosis</i>
Watery vaginal discharge	- Sudden gush or intermittent leaking of fluid - Fluid seen at introitus - No contractions within 1 hour	<i>Prelabour rupture of membranes</i>
- Foul-smelling watery vaginal discharge after 22 weeks - Fever/chills - Abdominal pain	- History of loss of fluid - Tender uterus - Rapid fetal heart rate - Light vaginal bleeding	<i>Amnionitis</i>
- Foul-smelling vaginal discharge - No history of loss of fluid	- Itching - Frothy/curdly discharge - Abdominal pain - Dysuria	<i>Vaginitis/cervicitis</i>
Blood-stained mucus or watery vaginal discharge (show)	- Cervical dilatation and effacement - Contractions	<i>Possible term labour or Possible preterm labour</i>

ABDOMINAL PAIN IN EARLY PREGNANCY

<i>Presenting symptom and other symptoms and signs typically present</i>	<i>Symptoms and signs sometimes present</i>	<i>Probable diagnosis</i>
• Abdominal pain • Adnexal mass on vaginal examination	• Palpable, tender discrete mass in lower abdomen • Light vaginal bleeding	<i>Ovarian cyst</i>
• Lower abdominal pain • Low-grade fever • Rebound tenderness	• Abdominal distension • Anorexia • Nausea/vomiting • Paralytic ileus • Increased white blood cells • No mass in lower abdomen • Site of pain higher than expected	<i>Appendicitis</i>
• Dysuria • Increased frequency and urgency of urination • Abdominal pain	• Retropubic/suprapubic pain	<i>Cystitis</i>
• Dysuria • Spiking fever/chills • Increased frequency and urgency of urination • Abdominal pain	• Retropubic/suprapubic pain • Loin pain/tenderness • Tenderness in rib cage • Anorexia • Nausea/vomiting	<i>Acute pyelonephritis</i>
• Low-grade fever/chills • Lower abdominal pain • Absent bowel sounds	• Rebound tenderness • Abdominal distension • Anorexia • Nausea/vomiting • Shock	<i>Peritonitis</i>
• Abdominal pain • Light bleeding • Closed cervix • Uterus slightly larger than normal • Uterus softer than normal	• Fainting • Tender adnexal mass • Amenorrhoea • Cervical motion tenderness	<i>Ectopic pregnancy</i>

ABDOMINAL PAIN IN LATE PREGNANCY

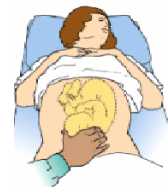
<i>Presenting Symptom and Other Symptoms and Signs Typically Present</i>	<i>Symptoms and Signs Sometimes Present</i>	<i>Probable Diagnosis</i>
• Palpable contractions • Blood-stained mucus discharge (show) or watery discharge before 37 weeks	• Cervical dilatation and effacement • Light vaginal bleeding	<i>Possible preterm labour</i>
• Intermittent or constant abdominal pain • Bleeding after 22 weeks gestation (may be retained in the uterus)	• Shock • Tense/tender uterus • Decreased/absent fetal movements • Fetal distress or absent fetal heart sounds	<i>Abruptio-placenta</i>
• Severe abdominal pain (may decrease after rupture) • Bleeding (intra-abdominal and/or vaginal)	• Shock • Abdominal distension/ free fluid • Abnormal uterine contour • Tender abdomen • Easily palpable fetal parts • Absent fetal movements and FHS • Rapid maternal pulse	<i>Ruptured uterus</i>
• Abdominal pain • Foul-smelling watery vaginal discharge after 22 weeks gestation • Fever/chills	• History of loss of fluid • Tender uterus • Rapid fetal heart rate • Light vaginal bleeding	<i>Amnionitis</i>
• Abdominal pain • Dysuria • Increased frequency and urgency of urination	• Retropubic/suprapubic pain	<i>Cystitis</i>
• Dysuria • Abdominal pain • Spiking fever/chills • Increased frequency and urgency of urination	• Retropubic/suprapubic pain • Loin pain/tenderness • Tenderness in rib cage • Anorexia • Nausea/vomiting	<i>Acute pyelonephritis</i>
• Lower abdominal pain • Low-grade fever • Rebound tenderness	• Abdominal distension • Anorexia • Nausea/vomiting • Paralytic ileus • Increased white blood cells • No mass in lower abdomen • Site of pain higher than expected	<i>Appendicitis</i>

HEADACHE, BLURRED VISION, CONVULSIONS OR LOSS OF CONSCIOUSNESS, ELEVATED BLOOD PRESSURE

<i>Presenting symptom and other symptoms and signs typically present</i>	<i>Symptoms and signs sometimes present</i>	<i>Probable diagnosis</i>
• Diastolic blood pressure 90 mm Hg or more before first 20 weeks of gestation		<i>Chronic hypertension</i>
• Diastolic blood pressure 90–110 mm Hg before 20 weeks of gestation • Proteinuria up to 2+		<i>Chronic hypertension with superimposed mild pre-eclampsia</i>
• Two readings of diastolic blood pressure 90–110 mm Hg 4 hours apart after 20 weeks gestation • No proteinuria		<i>Pregnancy-induced hypertension</i>
• Two readings of diastolic blood pressure 90–110 mm Hg 4 hours apart after 20 weeks gestation • Proteinuria up to 2+		<i>Mild pre-eclampsia</i>
• Diastolic blood pressure 110 mm Hg or more after 20 weeks gestation • Proteinuria 3+ or more	• Hyperreflexia • Headache (increasing frequency, unrelieved by regular analgesics) • Clouding of vision • Oliguria (passing less than 400 mL urine in 24 hours) • Upper abdominal pain (epigastric pain or pain in right upper quadrant) • Pulmonary oedema	<i>Severe pre-eclampsia</i>
• Convulsions • Diastolic blood pressure 90 mm Hg or more after 20 weeks gestation • Proteinuria 2+ or more	• Coma (unconscious) • Other symptoms and signs of severe pre-eclampsia	<i>Eclampsia</i>
• Trismus (difficulty opening mouth and chewing)	• Spasms of face, neck, trunk • Arched back • Board-like abdomen • Spontaneous violent spasms	<i>Tetanus</i>
• Convulsions • Past history of convulsions • Normal blood pressure		<i>Epilepsy</i>
• Headache • Stiff neck • Photophobia • Fever	• Convulsions • Confusion • Drowsiness • Coma	<i>Meningitis or Encephalitis</i>
• Headache • Blurred vision	• Vomiting	<i>Migraine</i>

MULTIPLE CHOICE QUESTIONS

- 1. You have just completed a vaginal examination of a woman who is 6 weeks pregnant. You read on her chart that her cervix is softened and looks cyanotic. You know that she is exhibiting which of the following signs?**
 - (A) Chadwick's sign and Hegar's sign
 - (B) Goodell's sign and Chadwick's sign
 - (C) Hegar's sign and Goodell's sign
 - (D) Tanner's sign and Hegar's sign
- 2. During your examination of a woman in her second trimester of pregnancy, you note the presence of a small amount of yellow drainage from the nipples. You know that this is:**
 - (A) Most likely to be colostrum and considered a normal finding this late in her pregnancy
 - (B) A sign of breast cancer
 - (C) Too early in the pregnancy for lactation to begin; the woman needs a referral to a specialist
 - (D) An indication that the woman's milk is forming
- 3. When palpating the fundus, you know that:**
 - (A) Fundal height is usually less than the number of weeks gestation, unless there is an abnormal condition such as too much amniotic fluid present
 - (B) The fundus should be hard and slightly tender to palpation during the first trimester
 - (C) After 20 weeks gestation, the number of centimeters should approximate the number of weeks gestation
 - (D) Fetal movement should be felt by the examiner at the beginning of the second trimester
- 4. You are palpating the abdomen of a 35-week pregnant woman and note that the fetal head is facing downward toward the pelvis. You would document this as:**
 - (A) Fetal lie
 - (B) Fetal presentation
 - (C) Fetal attitude
 - (D) Fetal variety
- 5. Leopold's maneuver is used to assess fetal:**
 - (A) activity.
 - (B) age.
 - (C) position.
 - (D) weight.
- 6. Positive Hegar's sign refers to:**
 - (A) softening of the lower uterine segment.
 - (B) early contractions.
 - (C) onset of labor.
 - (D) transition.
- 7. What type of procedure , the obstetrician tries to perform in the picture?**
 - (A) First pelvic grip
 - (B) Second pelvic grip
 - (C) Paraumbilical grip
 - (D) Combined grip



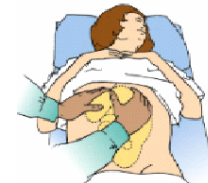
8. In this picture , the obstetrician tries to :

- (A) Assess cephalopelvic disproportion test
- (B) Assess the degree of flexion of the fetal head
- (C) Palpate the anterior shoulder of the fetus
- (D) Palpate the fetal back



9. In this picture , the obstetrician tries to palpate:

- (A) The anterior shoulder
- (B) The back of the fetus
- (C) The presenting part of the fetus
- (D) The part of the fetus occupying the fundus



10. A 31 year pregnant woman's last menstrual period was June 10. Assuming her usual cycle length is 28 days, which of the following is her most likely due date?

- (A) March 12
- (B) March 17
- (C) March 21
- (D) September 12
- (E) September 17

11. In the pregnant lady, the obstetrician tries to measure:

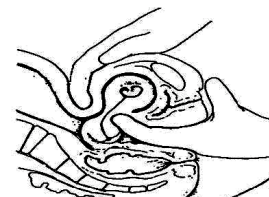
- (A) Abdominal girth
- (B) Fundal level
- (C) Symphysis- fundus height
- (D) None of the above



12. The obstetrician in this picture tries to elicit:

I. (A) Internal ballotment

- (B) External ballotment
- (C) Hegar's sign
- (D) Non of the above

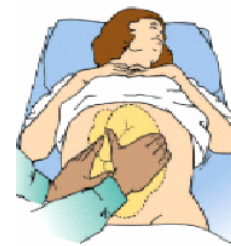


13. Colostrum can be expressed in a primigravida at:

- (A) 6 weeks
- (B) 12 weeks
- (C) 16 weeks
- (D) 20 weeks

14. The maneuver performed in this picture is:

- (A) Fundal grip
- (B) Paraumbilical grip
- (C) First pelvic grip
- (D) Second pelvic grip
- (E) Fundal level assessment



15. The following statements regarding Leopold's maneuver are false EXCEPT:

- (A) The woman should be lying with her head slightly elevated and her knees extended during the procedure.
- (B) When checking fetal attitude, the provider faces the head of the mother
- (C) To determine fetal position, the provider should directly face the woman's head.
- (D) To determine fetal lie, the provider should use her fingertips to palpate the fundus.

- 16. The following statements regarding Leopold's maneuver are true EXCEPT:**
- (A) Leopold's maneuver can be performed at 24 weeks of pregnancy.
 - (B) Fetal attitude is the relationship between the maternal and fetal longitudinal axes.
 - (C) This maneuver can identify multiple gestation
 - (D) Women should empty their bladders before this maneuver is performed.
- 17. Which of the following maneuvers would be omitted if the fetus is found to be in the breech position?**
- (A) Fundal grip
 - (B) Paraumbilical grip
 - (C) First pelvic grip
 - (D) Second pelvic grip
- 18. Blood pressure is lowest in pregnancy when the patient is in which of the following positions?**
- (A) Supine
 - (B) Seated
 - (C) Lateral recumbent, upper arm
 - (D) Lateral recumbent, lower arm
- 19. All of the following are normal findings in pregnancy EXCEPT:**
- (A) Leg edema
 - (B) Systolic murmur
 - (C) Diastolic murmur
 - (D) Third heart sound
- 20. Total weight gain recommended during pregnancy for normal weight women is:**
- (A) 15 lb
 - (B) 15-25lb
 - (C) 25-35 lb
 - (D) 40 lb
- 21. Naegele's rule is used to calculate the estimated due date by:**
- (A) Subtracting 3 months from the last menstrual period
 - (B) Subtracting 3 months from the last menstrual period and adding 1 week
 - (C) Subtracting 3 months from the last menstrual period and adding 2 weeks
 - (D) Adding 3 months to the last menstrual period and subtracting 1 week
- 22. Engagement determined in the first pelvic grip and reaffirmed in the second pelvic grip refers to:**
- (A) the descent of the fetal presenting part into the true pelvis.
 - (B) location of the fetal back.
 - (C) fetal part closed to the vaginal opening.
 - (D) the width of the pelvis.
- 23. One of the sure signs of pregnancy is:**
- (A) Hegar's sign
 - (B) Enlargement of the abdomen
 - (C) Positive HCG immunoassay
 - (D) Braxton Hick's contractions
 - (E) FHS heard separately from that of the mother
- 24. Erroneous pregnancy dating may result from:**
- (A) First trimester bleeding
 - (B) The recent use of oral contraceptives
 - (C) A history of irregular menses
 - (D) Conception occurring during lactation
 - (E) All of the above

- 25. By about the 12th weeks gestation all of the following is present except:**
- (A) Chadwick's sign
 - (B) Breast changes
 - (C) Starting improvement of morning sickness and urinary symptoms
 - (D) Internal ballottement
- 26. What is the earliest point in the pregnancy may Leopold's maneuvers be performed?**
- (A) 34 weeks
 - (B) 20 weeks
 - (C) 30 weeks
 - (D) 24 weeks
- 27. Performing Leopold's maneuvers would be contraindicated if which of the following was present in the patient's history?**
- (A) Excessively large infant
 - (B) Diabetes in pregnancy
 - (C) Pre-term labor
 - (D) All of the above
- 28. It is important to position the patient slightly on her left side before examination to avoid which of the following?**
- (A) Lower back strain
 - (B) Uterine tightening
 - (C) Lower limb edema
 - (D) Supine hypotension
- 29. Fetal attitude refers to the:**
- (A) relationship between maternal and fetal longitudinal axis.
 - (B) degree of flexion of the fetal head.
 - (C) degree of decent into the maternal pelvis.
 - (D) presenting fetal part in the pelvis.
- 30. The fetal heart beat can best be heard:**
- (A) superior to the maternal symphysis pubis.
 - (B) near the fetal buttock.
 - (C) anywhere along the fetal back.
 - (D) at the xiphisternum.
- 31. Having the patient empty her bladder prior to the examination prevents:**
- (A) inaccurate findings.
 - (B) lower back strain.
 - (C) nausea.
 - (D) Maternal distress
- 32. Which of the following may result in the contraction of the uterus during the performance of Leopold's maneuvers?**
- (A) Lying with bent knees
 - (B) Drinking fluids prior to exam
 - (C) Elevation of the patients head
 - (D) Examiner's hands are cold
- 33. Which of the following is true about locating the fetal head?**
- (A) It will feel round, firm and moves with the trunk.
 - (B) It has many irregular angles.
 - (C) It will move freely and independent of the trunk.
 - (D) It is not able to be distinguished from the buttocks.

- 34. Which of the following cannot be determined by Leopold's maneuvers?**
 (A) Fetal twinning
 (B) Size of infant related to gestation
 (C) Cervical dilation
 (D) Location of fetal heart beat
- 35. A 21-year-old woman presents as an emergency with a four-hour history of a lower abdominal pain and bright red vaginal blood loss. She has not had menstrual period for nine weeks and has a positive home pregnancy test one week ago. On vaginal examination, the uterus is tender and bulky. The cervical os is open. What is the most likely diagnosis?**
 (A) Inevitable miscarriage
 (B) Pelvic inflammatory disease
 (C) Normal pregnancy
 (D) Missed abortion
 (E) Septic abortion
- 36. Which of the following definitions best describes the term "incomplete abortion":**
 (A) Some, but not all, products have passed
 (B) Painless dilatation of the cervix
 (C) Uterine bleeding, closed cervix, no products of conception passed
 (D) Cervix dilated, products not passed
- 37. Obstetric examination of a case of concealed accidental hemorrhage reveal all of the following EXCEPT:**
 (A) the uterus is hard (board – like).
 (B) fetal parts not felt due to abdominal rigidity.
 (C) head is usually engaged.
 (D) FHS are normal
- 38. Criteria for diagnosis of inevitable abortion include all EXCEPT:**
 (A) Period of amenorrhea
 (B) Profuse hemorrhage .
 (C) Sever pain (uterine colic) .
 (D) External and internal os are closed.
 (E) Ovum is palpable through the dilated cervix

39. In this diagram , the fetal head is:

- (A) Not engaged
 (B) Engaging
 (C) Engaged
 (D) At the pelvic outlet

40. The position of the fetal head is:

- (A) Left occipitoanterior
 (B) Right occipitoanterior
 (C) Left Occiptoposterior
 (D) Left occipitotransverse
 (E) Right occipitoposterior

